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IX5

L I B E L L U S

DE

NATHANAËLE, CAUSA, CURATIONEQUE

S C O R B U T I.

AUCTORE

NATHANAËLE HULME, M. D.

To which is annexed,

A P R O P O S A L

FOR PREVENTING THE

S C U R V Y

IN THE

B R I T I S H N A V Y.

Quippe ita Neptuno visum est. VIRG.

L O N D I N I :

Prostant apud THOMAM CADELL, in vico dicto *Strand*.

M. DCC. LXVIII.



OMNIBUS
NAVIGANTIBUS,
LIBELLUM HUNC
DE
SCORBUTO;
D. D. D.

NATHANAËL HULME,

P R A E F A T I O.

*A*R S salutaris longa est: sic dixit HIPPOCRATES; sic experientia: HIPPOCRATES enim in eo, prout in multis aliis, nil nisi vox experientiae est. Id ipsum vero fortasse, in nullo alio morbo, tam manifeste apparet, quam in scorbuto. Quamvis enim semina hujus mali, a structura nostra ab origine, nobis inhaeserunt, semperque se ostendere, in omnibus corporibus, omnibusque temporibus parata fuerunt*; tamen, quae, ad hunc morbum universum pertinent, per multa volumina, perque magnae contentionis disputationes a medicis saepe tractata sunt, atque ad haec nostra tempora etiam, adhuc tractan-

* Vid. p. 42, 43.

tur.

tur. Imo vero quidem, morbus, vix nomen maxime sibi proprium, nunc etiam accepit. Quisquis autem recte cognoscit id, quod morbum facit, ipse quoque cognoscit id, quod morbum non facit.

Quod ad curationem quoque ejusdem praecipue pertinet, adeo multiplex medicina fuit, apud auctores medicos, ut nemo mortalium vix reperire posset, an hac vel illa potius uteretur. Observare autem liceat, quod, in rebus medicis, ubicunque id fieri appareat; vel causa mali, vel medicina, vel utrumque quidem, medentem ipsum fere semper fugiet. Admirabile autem est, et nunquam non medicis memoria tenendum, ut id, quod simplex sit, naturam potissime juvet; adeo ut, rebus quidem simplicissimis, morbos quam maxime terribiles, non raro tollat. Sic, luem veneream, argentum vivum, per se; scorbutum vero, gramen,

gramen, pomum, omneque genus oleris, celeriter solvit: adeo simplices sunt operationes naturae, semperque nobis adorandae. Quaedam vero, contra id vitium, specialiter laudata fuerunt, prout herba Britannica PLINII*,ameda Americana CARTIERI†, et similia; quae, vel aegre quidem vel longe petenda: hominis enim saepius est, quaecunque in promptu sunt spernere, difficiliaque ad omnia protinus currere.

Cum igitur, apud medicos, tam acriter disputatum esset de morbi curatione in terra, ubi in omni fere herba remedium adest; nil mirum est si homines, in navi alto mari haerente, de ejus curatione fere ex toto dubitarunt. Aliter autem res se habet; duce enim tantummodo natura, medicina facilis est: aegri siquidem

* Histor. natural. lib. 25. cap. 3.

† Hackluit's collection of voyages, vol. 3. p. 227.

Ⅹ P R A E F A T I O.

scorbutici succum fructuum acidum auide concupiscunt ; ipse verum assumptus semper pro medicamento est.

De natura etiam et causa mali, aequae ac de viis curandi, multae disputationes fuerunt : de his verum in hoc loco, minime controversiam movebo. Cum autem bellis superioribus, in navibus bellicis Britannicis, medicinam utramque exercuissem, per aequora vasta, et Europam, et Africam, et Americam cingentia ; nonnulla, tum de hoc morbo tum de aliis, experientia ipsa me docuit. Bellis finitis in patriam redii, famaue Academiae Edinburgensis captus, illic protinus veni, amore scientiae medendi ductus. Hic, annis duobus tribusve elapsis, laurea medica mihi concessa est, dissertatione primum, de scorbuto, publice et scripta et disputata. Sic ortus est libellus
ille

ille noster: nunc paululum auctus, et in publicum editus; ut, praecipua ad morbum pertinentia, quae, vel usu didici, vel ratiocinatione excogitavi, memoriae proderem. In quo, si et breviter et recte ea exposui, quae, multa volumina exercuerunt, est quod equidem votum erat; magisque si aliquid auxilii simul, commilitonibus meis attuli.

Huic opusculo alterum adjectum est, ad morbum praecavendum praecipue spectans; id ipsum quidem in lingua Anglica scripsi, quoniam ad rempublicam Britannicam quam maxime attinet.

Denique igitur, hoc meum qualecunque sit munusculum, mente benigna, maritimae accipiant gentes; omnibus praecipue navigantibus, opem ferens.

О П Р А В Д А Н И Я

Въспомогательныя науки, какъ и сама философия, не
 могутъ существовать въ отрывкѣ отъ жизни, отъ
 общаго бытiя, отъ общаго разума, отъ общаго
 сердца. Истинная философия не есть спекулятивная
 наука, не есть игра словъ, не есть искусство
 выводить заключения изъ произвольныхъ предположенiй.
 Она есть наука о жизни, о разумѣ, о сердцѣ, о
 обществѣ, о религии, о морали, о законѣ, о правдѣ.
 Она есть наука о томъ, что есть истина, что есть
 добро, что есть красота, что есть счастье.

Истинная философия не есть наука, не есть искусство,
 не есть ремесло, не есть профессiя, не есть
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 что есть добро, что есть красота, что есть счастье.

LIBELLUS

DE

SCORBUTO.

CAPUT I.

Nomen Morbi.

“**S**CORBUTI nomen apud auctores medicos,” ut recte observavit eruditissimus MEAD, “morbum designat adeo multiplicem, et facie diversum, ut non idem, sed alius atque alius esse videatur*.” Morbus autem in re ex toto aliter se habet; scorbutus enim non est farrago malorum, sed ipsissimus morbus simplex, et sui generis; est aequè regularis plerumque, et uniformis

* Monita et praecepta medica, cap. xvi.

in specie, ac ullus alius qui corporibus nostris incidere consuevit, si modo causae ejus ita sint; quod fere in longis evenit navigationibus. Itaque ex his recte veram et genuinam morbi rationem expectare licet.

DE hoc morbo igitur dicere propono, eodem modo, quo mihi in alto mari navibus bellicis Britannicis se ostendit; ante omnia praevisis signis levioribus, deinde gravioribus, in unaquaque corporis parte, prout in ipso morbo fit.

CAPUT II.

Morbi Historia.

INCIPIT igitur hoc malum a lassitudine gravitateque totius corporis, quod vespere et mane augetur, praecipue autem cum primum surrexerit homo, nisi forte noctu sudaverit, ubi semper multum levatur.

LUMBI

LUMBI et genua ex levi causa cito quasi fatigata sunt; corpus torpet, ab omni motu exercitationeque alienum est, et residere aut cubare quam maxime juvat; si vero laborare necesse fit, celeriter fatigatur, spiritus gravior est quam ex consuetudine, atque cor palpitat. Ascendens etiam nauta in sublime, saepe in media quasi via haeret, anhelans;—post id, iterum ascendit.

COLOR genuinus et vividus faciei dispergitur, subtumidus vultus est, luridusque pallor cum flavo mixtus inhaeret: quo magis inveteraverit morbus, eo magis primum flavescit, tum postea quasi aliquantum viridescit. In angulis oculorum, et vasa rubra, et carunculae, cum quodam luteo pallore inalbescunt; labia quoque pallida atque sublivida fiunt. Tristis moeror fronti insidet, vultumque humanum obumbrat. Haec est facies scorbutica. Cui autem naturâ sublu-

ridus quodammodo color est, tam facile non detegitur morbus; rubicundisque hominibus facies quasi ex frigore livefcit.

GINGIVAE quidem inter principia morbi vitiantur, totisque oris dentium primum afficiuntur; pruriunt, calent, dolent, quam maxime autem post cibum; deinde inflammantur, tument, spongiosae fiunt, atque interdentes affurgunt. Quo diutius manet morbus, eo magis gingivae spongiosae et tumidae in omni parte fiunt, ac digito vel leviter pressae atrum cruorem emittunt. Interdum plus in una parte quam altera intumescunt; multum dolent, tenui nigro sanguine turgent; admotum autem scalpellum, prompto auxilio est. Tandem eadem vel livefcunt, vel nigrescunt, et sic laxae fiunt, ut a dentibus ex toto discedant, quos facile omnes nunquam eximere liceat.

MALUM,

MALUM, et gingivas interiores, et exteriores, simul affligit.

GINGIVAE plerumque maturius magisque afficiuntur in ea parte cui genae insident, et interdum quoque interiores malae hoc loco patiuntur.

EORUM gingivae, qui herbam nicotianam manducant, fere semper minus vitiantur, quam quibus in consuetudine ea minime est: quamvis tamen video clarissimum Rouppe contra observasse in suo libro excellentissimo de morbis navigantium*.

DENTES eburneum suum splendorem, pro luteo vel etiam subnigro, mutant. Si vero exesus est dens in alterutra maxilla, morbus fere ad eam partem celerius currit, et multus dolor in medio osse haeret, qui etiam

* Vid. pag. 108, 109.

noctu, homine cubante, increfcit. Contra autem, cum dentes fani fint, rariffime maxillae ipfae dolent.

Os, ipfeque fpiritus, male olet inter ipfa initia; et faliva plerumque eft et tenuis et acris.

DOLORES in hoc malo cito nafcuntur, qui fere articulos cubiti et carpi, quam maxime autem genuum et talorum exercent; omnes juncturae quidem, cum perpetua laffitudine, imbecilliores et minus flexiles redduntur. Dolor acutus fine tumore, fine colore, interdum a talorum plica ufque ad genua, anteriorem tibiam percurrit; idem interdum a genibus ad inguen fpectat; crepitus in mediis genibus interdum quoque inter ambulandum editur. Dolores fub noctem plerumque increfcunt, fed fub lucis ortum, fi modo noctu fudor prorupit, magnopere levantur: fudor enim

enim vita scorbuticorum est, in omni coelo,
in omni aetate.

MAGNA imbecillitas cum dolore circa
lumbos, primis diebus accedit, quod fere
perpetuum est, et multum fatigat hominem;
potissimum vero, aut motu corporis, aut la-
bore subeunte.

DOLORES circa pectus inter principia morbi
coeperunt, huc atque illuc interdum, maxime
autem transversim, idem percurrentes; simul
spiritus difficultas adest, cum sensu cujusdam
quasi gravitatis in medio pectore haerentis.
Interdum ad unam partem magis ii tendunt,
ac tunc fere vel minus vel plus tussis acce-
dit. Crescente morbo, sensus etiam gravita-
tis, maxime ad inferius os pectoris, et diffi-
cultas spirandi, crescunt quoque, omnique
motu augentur; quae hercule periculosissima

omnium indicia sunt. Extrinsecus vero nihil apparet, neque id, quod affectum est, premente digito, dolet. Sensus quidam ro-
dendi nonnunquam ventriculo quoque in-
haeret.

MUSCULI scorbuticorum, nisi ubi tumores
adsunt, flaccidi fiunt, emacrescunt, atque ossa
ipsa quasi relinquunt.

CUTIS etiam cito nec leviter vitiatur, varie
mireque mutatur, quam maxime autem in
extremis partibus, quae praeteriri minime de-
bent. Anserina, subcalida, sicca fit, difficul-
terque insudat; aliis dura et aspera est, prae-
cipue fetosis; aliis laevior laxiorque, quibus
cutis tenuior nec fetosa: externa membra
omni mutationi magis, quam interna, obnoxia
sunt.

QUIBUS cutis aspera est, plerumque pu-
stulae parvulae aridae radicibus capillorum
inhaerent,

inhaerent, et externa crura femoraque tenent, rarius in superioribus membris sunt. Summam cutem hae paululum eminent, et modo rufae, modo subflavae, modo purpureae, modo sublividae, modo variorum colorum sunt, et fere squamam minutam siccam supra habent. Quibus vero cutis laevior, minus opportuni his sunt, sed habent maculas pulicum morfibus similes, non ultra cutem summam eminentes; quae nunc rubrae, nunc purpureae, nunc lividae sunt. Aliquando et pustulae, et maculae, inter se invicem sparguntur, totumque membrum possident. Quibus cutis quoque aspera est, plerumque foramina, per quae capilli affurgunt, circa radices eorum multum contrahuntur, et cuti frequenter fuligineus color inhaeret. Contra, quibus laevior et mollior, foramina magis proapatula, et cutis multo albidior est.

ANSERINA cutis, a primis diebus morbi se ostendit, et omnes extremas partes, maxime autem externas percurrit, magisque ubi frigus est: ea tubercula anserina circa radices capillorum formantur.

CICATRICES, vel ex vulnere, vel ab ulcere, potissime vero a furunculo, celeriter colorem mutant, et primum fuscae, deinde lividae fiunt; sed tamen omni dolore vacant. Cicatriculam in plica brachii, post sanguinis detractionem, livescere, quae per duos menses ante sanescebat, et circulo luteo vivido circumdari, vidi.

CUTIS plerumque magis patitur, ubi aspera fetosaque, quam ubi laevior est. Medium vero corpus fere omnibus his ex toto vacat, paucis pustulis exceptis, quae hic atque illic circa scapulas, cervices, pectusque sparsae, curiosaeque exploratae, saepe orbe flavo

flavo splendido ab illis emanante, ad imaginem radiorum stellae, circumdari observantur.

PRAETER maculas supra dictas, quae cutem foedant in extremis partibus, aliae maculae quoque sunt, quae summam cutem tenent, vestigiaque fugillationum repraesentant. Sed ut illae externa membra praecipue, sic rursus hae interiora, fere et cubitum et femur, magis afficiunt. Plerumque hoc modo nascuntur: primum macula exigua, vel fusca, vel potius fuliginea, subflava ora circumcincta apparet. Tum sensim sensimque haec increfcit, et magis ad colorem lividum spectat, sursum deorsumque serpens, donec tandem tenet totum internum membrum, et nigrescit, habens in omni re veram similitudinem grandis vibicis. Interdum etiam multus dolor pluribus diebus hoc ipsum praecedit,

praecedit, et nigrities quasi ex fugillatione, intra noctis unius vel alterius spatium erumpit, totumque internum membrum possidet, atque tum quidem dolor subito desinit: id saepius in femore, quam in ulla alia parte, evenit. Antequam vero hae fugillationes corpus relinquunt, paulatim minuuntur, et color alius ex alio fit, adeo ut cutis coloribus omnibus instar iridis distinguatur, donec iterum in pristinum habitum revertitur.

OMNIA autem illa nihili aestimanda sunt, prae tumoribus incipiente morbo orientibus, membraque affligentibus. Coeperunt in summa cute cum macula quadam vix oculis patente, paululum a vero colore decedente, et ad fuscum aut fuligineum spectante, quae, praecipue circa ejus fimbrias, subito flavescit, et in medio parum elevari, et aciei et tactui apparet. Tum quotidie magis ac magis tumor

mor increfcit, fed maxime percurrit fecundum longitudinem membri, nec tantum in altitudine affurgit, quantum in caeteris tumoribus effe confuevit. Mobilis fub cute aliquandiu refat ubi contrectatur, nunquam tamen dolet, nifi digitis prematur.

Quo vetuftius autem vitium fubeft, eo magis tumor augetur, et altius a fuma cute quafi in mufculos fubjacentes penetrat; deinde immobilior redditur, fimulque corpus affligere, et dolere incipit. Tunc etiam varium colorem accipit, modo purpureum, modo lividum, modo plumbeum, modo fubnigrum, modo omnia haec quodammodo inter fe invicem mixta. A mufculis altius is, ufque ad ipfa offa penetrare, et mufculos iisdem affigere videtur, adeo ut durum immobilem tumorem uniuiformi praeftet, extendentem per totam membri longitudinem, et perquam dolentem, praecipue

praecipue aut flexo aut extenso membro. Ubi demum tumori paulum aetatis accessit, eo ipso contrectato, calor ingratus, ficcus, pungens, tactu fere semper percipitur, qui, digitis remotis etiam, per aliquod temporis spatium iis inhaeret, et ex toto ab eo differt quod in tumore inflammato sentitur.

EJUSMODI tumor plerumque externum cubitum et suram, praecipue autem hanc vexat, atque tum quidem, malum tam maxime fatigans et dolens accedit, quam unquam corpus scorbuticum affligit. Ubi igitur id fit, quod equidem frequenter est, vitium fere ad inferius medium carneum musculi gastrocnemii externi oritur, interdum incipiente, saepius autem increfcente morbo, et locum levi quasi dolore et rigore primum afficit, maxime autem inter ambulandum. Post haec, in brevi temporis spatio, tumor dolorque

cum duritie augmentur, et morbus paulatim sursum et deorsum per totum membrum serpit, tendens a calce usque ad poplitem; et interdum ex hoc, ad femur superius versus, dolor quoque spectat. Sura ipsa demum praecipue, et tumet, et indurescit, et maxime dolet, cutisque superextensa colorem alium atque alium rapit, ac totum membrum tandem intumescit, nihilominus tamen sic, ut pristinam formam quodammodo retineat. Aeger autem nunc, propter dolorem, sic porrigi crus pati non potest, ut calce terram premat, ac in secunda valetudine; sed perambulat claudicans summis digitis, genu semper flexo: ipsa junctura quoque interdum et dolet multum, et tumet. Bina vero crura hoc modo rarius vel nunquam simul afficiuntur.

PLUS deinde, tendines musculorum genu flectentium nunc explorati, stante aegro, vehementer

vehementer rigent, contrectati autem non multum dolent. Si vero in poplite ipso, inter tendines rigidos, medicus digitis premat, laborans tum multo dolore afficitur, sursum deorsumque se extendente. Tendo Achilles quoque aeque riget, ac eorum qui genu flectunt, sed admoto digito, non tantum dolet, quantum medium carneum gastrocnemii. Ex eo itaque judicare liceat, hisce in casibus, morbum minus afficere tendines, quam carnem musculosam; magisque, utpote cum vitium primam et praecipuam suam sedem in ipso musculo, et non in tendine, habere videatur.

ADJICIUNTUR ad haec alii tumores, qui molliores prominentioresque sunt, a magnitudine nucis avellanae, ad eam etiam ovi gallinacei plerumque assurgentes, et variorum colorum ut priores sunt; hoc excepto, quod cutis aliquando colorem naturalem conservat.

fervat. Ubi grandiores fiunt, dolent, sed non antea nisi premuntur, deinde frequenter degenerant in eos primae speciei, incrementis latitudine, non autem altius affurgentes, penetrantesque per musculos, usque ad ipsa ossa. Plerumque cubitos cruraque externa juxta tibias tenent; modo ad internos cubitos quoque apparent, modo ad brachia femoraque se affigunt, sed id rarius.

VIBICES vero tumoresve scorbutici, rarius medium corpus vexant, nec inflammantur, nec ad suppurationem spectant, nec saepe exulcerantur, nisi summa cutis ab aliqua vi externa frangitur; sed idem permanent usque ad mortem, vel paulatim evanescunt, prout aeger convalescit.

DENIQUE tumores scorbutici saepissime ita se habent, ut jam dictum est, ubi per se ex morbi natura coeperunt; maxime autem

C

variar;_i

variari possunt, vel ex aliquo colliso, vel ex plaga, vel ex alia re hujusmodi : tum enim id, quod affectum est, morbus subito rapit, et omnia quam celerrime in pejus ruunt.

ET pedes et crura quoque non raro in hoc malo intumescunt, eadem via pene quam in hydropicis. Tali enim primum vesperi, et post exercitationem, paululum tument, mane autem, simul ac homo surrexerit, id ipsum vix oculis patet ; crescente morbo, vitium quoque crescit, donec pedes et tibiae ex toto tandem afficiuntur. Tumores ejusmodi praecipue differunt ab iis, qui in caeteris morbis oriuntur, quod crura a fuligine quasi decolorantur, et fere maculae, aut luteae, aut sublividae, aut purpureae, cutem foedant ; et idem tumor digito pressus, fossulam quandam difficiliter reddit, quae item tardius rursus impletur. Ea saepius incidunt, quando-cunque malum jam inveteraverit.

QUOD ad ulcera vero pertinet, rarius si unquam in tumore scorbutico, vel ulla alia parte oriuntur, nisi ubi summa cutis prius, vel plaga, vel vulnere, vel ulcusculo, vel ab alia quacunque causa laesa est. Ubicunque autem id acciderit, frequentissima sunt, et dolent, et vehementer corpus fatigant. Facile haec ab aliis discernuntur, quandoquidem aegre pus emittunt, et plerumque quotidie, detecto ulcere, intus concretus cruor se ostendit, eique inhaerescit. Insuper etiam, aliquando evenit, ut caro spongiosa ex medio ulcere celeriter excrescat, et quamvis nunc ex toto, vel manu, vel medicamentis tollitur; nihilominus tamen, nunc subito, fungi ad instar, iterum iterumque excrescit. Sedes suas plerumque in ipsam spinam tibiae habent; pessima autem haec sunt, quae talum aut interiorem aut exteriorem vexant. Ea ipsa vero rarissime os infra positum vitiant, quanquam diu corpus affligant.

HIS propositis, transitus ab exterioribus ad interiora facilis est. Et quamvis febris est morbi genus, quod totis corporibus inhaerescit, et vitiorum frequentissimum, et generi hominum inimicissimum, nihilominus tamen scire licet, hanc ipsam rarissime si unquam in scorbuto se ostendere.

SOMNUS quoque modicus est, et quanquam vix ulla pars corporis humani aequè doloribus opportuna, ut caput est, attamen in hoc morbo ex toto dolore vacat. Lingua etiam naturaliter se habet, nisi aliquando paululum flavescit, sed rarius ulla sitis est; cibi cupiditas similiter plerumque viget; sensus pariter tuti sunt; et mirandum dictu! haec omnia fere idem permanent usque ad mortem.

PULSUS vero arteriarum different pro natura corporis, et tempore morbi, sed plerumque ubi lues vetustior facta est, exigui imbecillique

cillique sunt; aegro residente, septuagies, octogies, vel etiam nonagies, intra horae minutum fere agitantur; nonnunquam, sed rarius, quoque inaequales sunt, et intermittunt,

ALVUS plerumque perquam compressa est, et haec nota fere semper morbum antecedit per longum temporis spatium; interdum vero bene se habet. Rarissime vero vel nunquam dolor in ventre est, nisi ubi aut diarrhoea, aut dysenteria adest. Ea enim vitia ulterioribus diebus morbi non raro subeunt; haec autem saepe pestifera, illa salutaris est.

URINA sine difficultate fertur, sed paulo minus quam in consuetudine, et fere semper flammea est, quodammodo ad similitudinem vini Maderiensis. Ex qua, quod desidit, crassum et fuscum vel rufum est, et interdum purpureo mistum; deinde pars supra innatans

aquae similis fit, tum pellicula ad latera vitri concrefcit, eique adhaeret. Aliquando item aeger, inter meiendum, in fistula urinae calorem sentit.

INCISA vena inter principia morbi, fanguis erumpens, et tenuis, et subniger est; deinde concretum in patina humore subflavo circumdatum, mollioris laxiorisque habitus est, quam in sano corpore confuevit; in summa ejus parte rubet, et pellucet, in media autem et ima nigrefcit; interdum vero pelliculam subviridem supra tenet. Nunquam fanguinem nisi ubi malum incidit in vetustatem, quoniam tum semper judicavi, id esse vel supervacuum, vel contrarium. Non ignoro quidem, LUDOVICUM ROUPPE nuper proposuisse, fanguinem emissum ex corpore scorbutico, non tantum incipiente, sed etiam confirmato morbo, esse spissum, crassum* ;

* De morb. navigant. p. 145, 146, 158.

neque

neque quid respondere satis scio, nisi dicere liceat, quod sanguis Batavi, quodam modo, nescio quo, et spissus, et crassus fit, dum is Britanni, et rarus, et tenuis *.

SANGUINIS profluvium est, alias e naribus, alias e gingivis, alias ex ano, rarius autem ab ulla alia corporis parte, nisi ubi cutis summa laesa est, sicut in ulceribus, similibusque.

PROFUSIO autem salivae rarius vel nunquam in hoc vitio fit, nisi cum argentum vivum adhibeatur, aut aliqua alia res, quae salivam moveat.

COR non raro vehementer palpitat, praecipue autem, vetusto jam morbo, aut corpore moto.

* Mead's discourse on the scurvy, p. 104. Huxham on fevers, chap. v. Monro's diseases of British military hospitals, p. 257. 258. 262.

AEGRI scorbutici nunquam non fiunt maxime irritabiles, et animo, et corpore; hoc enim, frigus, omnisque perflatus celeriter vexat; illum, metus, tristitia, cito deprimit, laetitia vero et spes aequae subito erigit. Accedit ad haec, quod, qui olim fortissimi, omnique timore vacui, nunc pusillanimes sunt, omniaque vel minima timent.

CORPORA scorbutica videntur habere vim magnam repellendi omne quod inflamat; tumor enim ejusmodi rarius ad inflammationem aut suppurationem spectat, et febris rarissime, si unquam, hoc morbo laborantem affligit. Contra autem, plerumque ubi febris finitur, ibi scorbutus incipit.

UBI malum jam inveteraverit, frequentius magna difficultas spirandi est, animaque ex causa levissima deficit, haec autem sine dolore, sine tussi, sine sputo, sine sono sunt; sed tales angustiae,

angustiae, et gravitas totis præcordiis affiguntur, quales depingi verbis facile non possunt. In ejusmodi casibus, aegrotantes, quamdiu sine motu in lectulis decumbunt, videntur bene se habere; fortem enim vocem edunt inter loquendum, et cibum assumunt ut in sanitate; sed propter aliquas necessitates, ab una parte navis ad alteram moti, aut aëri aperto expositi, ex improvviso perierunt. Cujus rei illustre exemplum ipse cognovi: miles enim classarius scorbuticus in lectulo pensili placide jacens, commilitonibusque suis hilariter colloquens, emissariis tormentorum, post longam tempestatem, prope locum cui haesit, semel et simul apertis, aëre protinus irruente, homo subito extinctus est, non secus quam si fulmine ictus.

SCORBUTICI plerumque vitam cum morte placide commutant, omnesque sensus salvi ad interitum permanent; atque in pluribus casibus,

bus,

bns, obdormiscere potius, quam mori, recte dici possunt.

QUOD ad cadavera scorbutica vero pertinet, ab experientia propria nihil dicere possum, quoniam ea incidere mihi non concessum est; ideoque ab aliis auctoribus id ipsum est petendum.

DENIQUE illud ignorari non oportet, ea omnia, quae supra proposita fuerunt, tantummodo ad navigantes pertinere, et ad eos quoque, qui non ullo alio morbo simul laborant; ut puta lue venerea, tabe, visceribus infirmis, similibusque. His enim, genuinus et perpetuus habitus morbi multum mutari potest, ac magis variam formam induat.

USQUE adhuc dictum est de historia morbi, sicut plerumque mihi se ostendit; nihilominus tamen, apud auctores jure fidelissimos,
multa

multa minus vulgaria, satisque mirabilia indicia hujus luis, memoriae prodita fuerunt: itaque ego quoque, de una nota hujusmodi, in veniente capite tractabo.

C A P U T III.

De imbecillitate oculorum in corpore scorbutico.

INTER plurima loca quibus Britannia, virtute sua bellica, jure potita est, Calpe ceu columna una Herculea, non postremum tenet. Cum enim quasi clavis totius maris Mediterranei recte aestimari possit, grassante bello, classi regia semper munita est. Quae classis quidem, inter proxima bella, mirantibus omnibus gentibus, per hiemem totam heracleum finum tenebat, stationem malefidam carinis* ; obstantibus etiam saxis latentibus infra, ventis stridentibus supra, hostibus patentibus cir-

* Vid. le Siecle de Louis XIV. chap. xix.

ca; sed dic mihi, quid tentare nolunt, quid perficere non possunt navigantes nostri?

Hoc loco quidem, mirabile dictu! inveni hominem scorbuticum, qui interdiu satis, noctu autem nihil cernere posset; *νυκταλωπία* a Graecis morbus appellatur †. Hoc in casu autem, pro indicio potius, quam pro ipso morbo habendus est; quoniam scorbutico soli tantummodo adfuit, paulatimque cum eo decessit, nulla alia medicina adhibita, quam quae scorbutico propria erat; cum morbo venit; cum morbo diffugit.

NUNQUAM ipse antea observavi hanc notam morbo affigi, atque hunc unicum aegrum sic affectum, inter multos scorbuticos, tum habui. Sed ut certior factus sum, indicium fere perpetuum hujus morbi erat in classi Britannica Calpen tuente, anno nostrae salu-

† Foef. in Oeconom. Hippocrat. p. 263, 264.

tis millesimo septingentesimo sexagesimo et primo. Praeterea, DAVID SKIRVIN chirurgus classis regiae non mediocris, mihi dixit, se vidisse duodecim scorbuticos hoc indicio correptos in sinu Heracleo, anno supra dicto, ubi ille praefuit rei medicae in navi Activa dicta, quae nuper inclaruit, Hermione * rapta. Omnes ex toto curati sunt ac in ipso scorbuto; affectusque oculorum paulatim decesserunt, eodem modo, quo omnia caetera indicia corpus reliquerunt, semper enim inter notas mali annumerati erant.

QUOD ad nostrum aegrum autem pertinet, praeter multa alia graviora scorbuti indicia, ejus oculi ita se habuerunt: Caecitas nocturna sensim sensimque cum morbo accessit, donec tandem noctu nihil cernere posset; post haec, quotidie cum lumine desinit, tenebrisque repetiit, adeo ut alba et atra dif-

* Navis bellica Hispanica, sic dicta.

cernere non potuisset, quamvis etiam coelo fulgebant luna stellasque sereno. Et si lucerna accensa est, tamen nihil cerneret aeger, ipsaque lux ei obscura esse videbatur. Interdium vero res satis discernere posset, quam maxime autem ubi lumen fulgens erat, sicut in sole. Si item medio die descendebat in tenebras navis, caecitas statim rediit; ex quo cognosci potest, causam ejus esse eandem, tum interdium tum noctu †. Oculi ipsi vero clari erant, atque ex toto sani esse videbantur, nisi, quod paulum madebant, et pupillae multo magis dilatabantur quam ex consuetudine; hoc autem excepto, recte se vel contrahebant, vel dilatabant, prout plus minusve lucis eis oppositum erat. Nec calor, nec prurigo, nec dolor, nec tumor in palpebris erat; sed anguli oculorum, sicut in aliis scorbuticis consuerunt, cum quodam luteo pallore inalbescebant. Hoc vitium oculorum esse contrarium his,

† Vid. *Medic. Observ. and Inquir.* vol. i. p. 121, 122.

quae oriuntur ex imbecillitate cum inflammatione, liquet evidenter ex eo, quod in his, lux fulgens multum affligit, in illo autem, multum delectat.

NOVISSIMÉ ex dictis manifestum est, aegrum, ut recte conspectum rerum praestaret, lucem splendentem exegisse, eamque ex sole ipso; nam ille quidem verus fons luminis est, atque hujus magni mundi quasi oculus animusque.

CAPUT IV.

De causa proxima.

RERUM cognoscere causas semper jucundissimum est, id ipsum vero, propter humanam imbecillitatem, rarius mortalibus datur; veritas enim saepe in puteo alto quasi latet,

latet, felixque ille est, qui ex eodem sic haurire potest, ut omnibus clare pateat.

QUOD ad causam vero proximam pertinet, inter medicos auctores etiam multum disputatur, non modo de re; sed de verbo quoque*. Causa autem proxima morbi, duce BOERHAAVIO, viro et arte et facundia insigni, “appellatur tota illa simul, quae totum jam praesentem directe constituit; haec semper est integra, sufficiens, praesens, totius morbi, sive simplex fuerit, sive composita. Hujus praesentia ponit, continuat, morbum. Hujus absentia eum tollit. Est fere eadem res ipsi integro morbo. Hinc inquisitu utilissima, maxime necessaria †.”

ITAQUE causa proxima scorbuti, ut mihi videtur, est retentio et accumulatio multae materiae putrescentis, sensim sensimque nata

* Gaub. institut. § 60, 61.

† Institut. medic. § 740.

in corpore humano. Fons hujus materiae praecipuus, est remora corpusculorum putridorum, quae, in sano corpore expelli et in auras diffari solent, partim per vias urinae, partim per alvum, maxime autem omnium per foramina cutis pulmonisque invisibilia. Cor enim, dum vivimus, perpetuum mobile est, et sanguinem ex omni corporis parte vel minima accipit, iterum iterumque eum ipsum remittit. Hoc autem perficiendo, fluidum vitale magnum dispendium patitur; pars enim ejus, per renes quidem percolatur, et sub specie urinae corpore ejicitur, quae, et acris est, et cito corrumpitur*; pars cum stercore miscetur, quod et acre et foetidum jam redditur.

MATERIA vero, quae avolat per foramina cutis, non tam clare oculis patet, nisi ubi sudor ipse erumpit; summus autem Anato-

* Boerhaav. institut. § 375.

micus BENIGNUS WINSLOW, propriis oculis eam ipsam, vel certe ejus umbram, a capite nudo hominis in sublime ascendens, sub specie vaporis vidit *. ALBERTUS V. HALLER quoque, vir jure magni nominis, “ in cuniculis subterraneis Claufthaliae et M. Rammelsberg vidit de singulo digito, de facie, deque omni nudi corporis particula fumum nubemque exhalare †.” Copia perspirantis vaporis insignis et perpetua est, in omni homine, sub omni coelo, maxime autem calido; ut experimenta clarissimorum virorum staticorum docuerunt ‡. Scire autem licet, perspirantem vaporem esse acrem citoque putrescentem, ex “ nostri sanguinis natura, et in canibus sagace discrimine herorum, et aëris demum corruptione a respiratione ||.”

* Exposit. anatom. du corps humain. sect. vii. § 164.

† Element. physiolog. tom. v. p. 53.

‡ Haller. elem. physiolog. tom. v. p. 62.

|| Haller. prim. lin. § 439.

UBI autem fudor ipse, vel calore, vel motu corporis, vel ulla alia causa elicitur, omnibus evidenter manifestus est; is quoque et acris, et putrescens est. “Nimio motu aut calore regionis foetidissimus, tandem sanguineus redditur *. Praeterea, fordida vita et aliqua peculiaris infalubris humoris excretio foetorem facit in pedibus, inque toto corpore multorum hominum †.”

Ex pulmone autem quod exhalat, in frigidis locis per se patet, veniens ex ore fumi ad instar; in calidioribus autem, admoto speculo; hoc similiter et acre, et putrescens est. “Odoratum enim certe est, quod diffilamus, nobis ingratum, canibus sagacibus notissimum, et procul dubio imprimis ejus vitii reum, quod aër contrahit, quando turba hominum in angustium spatium stipatur ‡.”

* Haller. prim. lin. § 442.
tom. v. p. 48.

† Element. physiolog.

‡ Element. physiolog. tom. iii. p. 354.

HAEC quidem in saniffimis corporibus sunt; in morbidis vero notae majoris corruptionis saepius evidentiores sunt, ut apud auctores medicos videre licet. Id ipsum in scorbuto vetustiore quoque fit, ut manifestum est ex malo odore spiritus; ex gingivis putridis foetidis; ex urina flammea; ex visceribus internis corruptis, atque etiam ipsis ossibus †; ex sanguine soluto nigro; ex maculis lividis nigris; ex liquore colorato corrosivo, in cavo ventris aut pectoris invento ||.

A QUIBUSDAM autem dici potest, quaedam ex his indiciis oriri ab effectibus potius, quam a causa morbi, utpote cum non evidenter appareant, nisi ubi malum jam inveteraverit §. Utut autem id fit, quandoquidem spiritus male olet, et gingivae putrescunt fere a primis diebus, causam putridam a principiis

† Anson's voyage, Lond. 1749. p. 142.
 l'academ. royal. des sciences, 1699. pag. 237.
 de morb. navigant. p. 158.

|| Histoir. de
 § Rouppes

morbi in corpore latentem plane indicant : in hisce casibus quidem, causa et effectus adeo intime connectuntur, ut vix sane in idea separari possint.

NIHILOMINUS tamen quamvis aliquid in morbo est, quod semper putrescit, id ipsum vero in re ex toto differt ab eo, quod in multis febribus putridis adest. In his enim fere semper subest calor intensus, fastidium cibi vehemens, dolor capitis et temporum, delirium, sitis magna, rarius si unquam vero in illo. Accedit ad haec, quod febres putridae alia atque alia corpora inficiunt, et pares generant; scorbutus nunquam. Ut equidem multum inter se discrepant causae quae inflammationem gignunt, (si fas est judicare ex effectibus), prout fit in variolis, in morbillis, in lue venerea; sic etiam idem fieri potest in causis putridis, adeo ut morbos ex toto inter se differentes creent; alias pestilentiam

veram, alias tormina ventris, alias febrem Indicam flavam, alias anginam malignam. Ex dictis igitur judicare licet, causam putridam scorbuti in totum diversam esse ab illa multorum aliorum morborum: et nunc itaque inquirendum est, unde ea oritur, et quomodo vitium scorbuticum excitare potest.

OMNES humores corporis humani, ut supra comprehensum est, per se ad putredinem spectant*; atque quidem in re putrescerent, si recentes succi a cibo orientes omnique putredini obstantes, non semper eis adjecti erant. Cura enim Dei magna id ipsum praevidens, facultatem cuicumque fere rei, quae vel esca vel potus homini est, repellendi omne putre dedit; ut ingeniosissimi viri JOANNES PRINGLE Baronettus †, et DAVID MACBRIDE ‡, nuper invenerunt. Haec

* Vid. p. 35. 36. 37. † Appendix to the diseases of the army. ‡ Experimental essays, Edit. 2.

corruptio igitur naturalis est omnibus plus minusve, etiam a natu usque ad extremam aetatem. At ne id quidem nimis cito superveniret, natura intestina, vias urinae, foramina invisibilia cutis pulmonisque creavit; ut essent velut tot spiracula, per quae materia putrescens, tam celeriter corpore exeat, quam generatur.

Si autem cibus quotidie assumptus ad putredinem valde spectet, sicut fit in diaeta marina *; tum equidem sequitur, materiam putrescentem in corpore multum, et in vi, et in quantitate augendam; quam maxime autem si tum spiracula corporis aliquantum clausa sint. In scorbuto verum, alvus compressa est, urina minor quam in consuetudine, summa cutis semper, et ficca, et constricta, adeo ut rarius insudet. Pulmo etiam difficile expanditur, atque dehinc perquam verisimile

* Vide p. 59.

est, quod multo minus perspirat quam in sano corpore *. Praeterea, cum malum plerumque tam subito pectus vexet, sine ulla nota externa, testatur pulmonem praecipue et cito in scorbuto affici; atque etiam cadavere inciso, idem confirmatur †. Ideoque manifestum est, materiam noxiam et putrescentem in hoc morbo, quae expelli debet, paulatim in corpore retineri et accumulari. Ex omnibus vero his retentis, mora materiae, quae in secunda valetudine, per foramina cutis pulmonisque transire consuevit, quam maxime noxia est; cum plerumque, et in quantitate, et fortasse in facultate quoque, caetera retenta excedat.

CAUSA igitur scorbuti, a structura nostra ab origine, nobis inhaeret, semperque se ostendere, in omnibus corporibus, omnibus-

* Vid. Hales's stat. essays, vol. ii. p. 86. 87.

† Rouppe de morb. navigant. p. 152.

que temporibus parata est. Tantummodo enim requirit extrinsecus, gradum frigoris quendam per aliquot temporis spatium protractum, et multi motus corporis absentiam, ita ut materia putrescens, quae excerni consuevit, paulatim intra corpus retineri possit; simulque intrinsecus, tales cibos et potiones, quales, vel parum, vel nihil succi putredini repugnantis praebent.

Ex eo quoque sequitur, quod si cibus et potio tantum putredini obstant, quantum excedant vi materiam putrescentem intus retentam, morbum nunquam futurum, in ulla aetate, in ullo coelo. Homines enim, usu olerum, aut ullius cibi potionisque putredini repugnantium, in omnibus frigidis locis, scorbuto vacare possunt. Contra autem, ubicunque fit, assumpta, materiae putrescenti intus retentae, non satis repugnare, scorbutus certissime oriri potest, in omnibus regionibus

bus

bus, ab utroque polo ad eam lineam quae medium orbem terrarum fecat.

UTPOTE cum autem, in regionibus semper calidis, foramina cutis adeo patula sint, ut materia putrescens corpore exeat aequè cito ac generatur, morbus rarius apparebit; quamvis idem genus cibi assumitur, quod certe scorbutum in frigidioribus locis crearet, ubi materia putrescens magis frigore obferatur et retinetur. Ob hanc causam quoque fit, regiones frigidas, magis obnoxias huic vitio esse, quam calidiores; et hieme, quam aestate. In India enim Occidentali, sub coelo Caribbaeo, nautae nostri diaeta marina utentes, salvis tamen corporibus, salem ipsum, ex omni parte corporis, sub specie sudoris expulerunt, et in copia quoque vix credibili. Vidi enim eum salem sic insudare per calceamenta, maxime ad oras eorum, ut crustas falsas albas, iisdem inhaerentes, formet,

met, ter vel quater spatio diei; et cum idem linguae admoveretur, perquam stimulans, et acris erat; calceamenta quoque putrere, et dehiscere fecit. Si igitur per foramina pedum, tantum materiae ejicitur, quantum judicare liceat expelli per totam superficiem corporis, quae, his in regionibus calidis, semper semperque humore profluit? et quantum differentiae sit quoad quantitatem materiae, quae sic, dato tempore, iis locis calidis corpore ejicitur, ex ea, quae frigidis expellitur, minime difficile est conjectare?

HAEC materia per vias cutis sic expulsa, tam noxia est, quam enecare ea animalia, quae, in frigidioribus regionibus, infestare corpus humanum solent, et a Graecis *πρόδιαια* nominantur. Quamvis id mirum fortasse quibusdam videatur, tamen res est bene cognita his sub zona torrida navigantibus. Idque quidem in mentem revocat, narratiunculam
 illam

illam de quam maxime nobilissimo Don Quixote de la Mancha *. Hic enim, inter navigationem suam ulnas non multas numerantem, in rivo fati parvo, vultu serio res magnas intus testante, armigerum suum humilem rogavit, ut totum corpus manu pedentim percurreret, et perscrutaretur num forte haec animalia adhuc non corpus reliquerant; simulque dixit ei, Hispanos ad Indiam navigantes, his absentibus, fati certo scire, an lineam aequinoctialem transiissent necne. Dictum factum; Sancho enim obediens, poplitem finistrum versus, manum caute sub veste admovit, et paulo post, vultum significantem magistro attollens, Eques intelligens ei inquit, Invenist'n' unum igitur? Imo plura, respondit Sancho, digitos simul celeriter quassans; tum subito manum foedatam aquis bene lavit. Sed haec obiter.

* Famous adventure of the enchanted bark.

Ex propositis itaque, ut judico, recte colligere liceat, causam proximam scorbuti omnino oriri ex retentione materiae putrescentis in corpore, atque igitur minime evenire posse, ex evaporatione aëris fixi, aut ullius alii vaporis per foramina cutis, ut DAVID MACBRIDE, ab ingeniosissimis suis experimentis credere videtur*. Vix enim existimari potest, quin hisce in regionibus calidis, multum magis aëris hujus fixi transeundum sit per foramina cutis, quam in frigidis, ut ipse confitetur †; tamen non modo scorbutum non facit, sed contra, quod hac via evacuatur, ei prohibendo maxime praestat. Nihilominus tamen, nostri, his in locis calidis, quam maxime tum opportuni erant aliis morbis putridis, prout torminibus ventris, et febris flavae Indicae; scorbuto verum minime, quamvis ex toto diaeta marina utebantur.

* Exper. Essays, p. 87. 88. 89. 90. & 157. 158.

† Vid. p. 158.

Quae res quidem quoque genus testimonii est, causam putridam horum morborum omnino discrepare ab ea scorbuti.

DENIQUE igitur, causa proxima scorbuti nascitur a retentione et accumulatione multae materiae putrescentis, sensim sensimque in corpore humano factæ. Atque ortum præcipuum habet a frigore foramina cutis claudente, et a cibo et potione, quae, vel per se natura putrescunt, vel certe non adeo aliena putredini sunt, ut succo sanguinique fatis materiae dent, quae corruptioni nunc corpori inhaerenti obstet. Hisce rebus enim, malum magis magisque increfcit, paulatim totum corpus afficit, et fluida et solida corrumpens, tandem producit omnes terribiles effectus scorbuti, hominemque jugulat.

CAPUT V.

De causa praedisponente.

CAUSA praedisponens scorbuti est quodcunque vel per se, sensim sensimque generat, vel generare spectat, multum materiae putrescentis, in fluidis et solidis corporis humani. Multae variaeque sunt causae quae ad scorbutum creandum pertinent, cum in mari, tum in terra; sed dicam tantummodo de his quae in alto eveniunt navibus bellicis Britannicis, utpote cum ex his solis morbi historia orta sit.

PRÆCIPUAE vero ex his sunt frigus in aëre; quam maxime autem tales cibi potionesque, quales vel per se cito putrescunt, vel difficile digeruntur, vel praebent stomacho parum materiae antiputrescentis in sanguinis circuitum post absorbendae. His remotis

I

enim,

enim, caeterae causae parum valent, et rarius si unquam morbum facerent in ullo corpore aliter sano, aut in ullo coelo.

QUOD ad aëra vero pertinet, diligentissimus JACOBUS LIND, in tractatu suo excellentissimo de scorbuto, condemnavit ejus humorem sive aquam, sicut principem et praecipuam causam praedisponentem scorbuti*. In eo autem erravit, frigus enim in aëre, et non aqua, est princeps causa praedisponens; aqua enim sine frigore, rarissime si unquam parens est scorbuti, sed morborum generis plane diversi; prout febris pestilentialis, torminum ventris, caeterorumque morborum febre junctorum. Aqua tantummodo laedit in scorbuto, prout vel plus, vel minus, frigore miscetur.

ILLE parens omnis medicinae HIPPOCRATES, primus omnium observavit, calorem

* Treatise on the scurvy. Edit. 2. p. 68.

aqua conjunctum, esse causam morborum pestilentialium *, et post eum quidem multi alii non mediocres viri; GALENUS †, CELSUS †, LUCRETIUS poeta ||, DIODORUS SICULUS historicus **, PROSPER ALPINUS ††, LANCISIUS ††, MEAD ||||, PRINGLE †. Non unus autem horum omnium, quicquam memoriae prodidit de scorbuto tum grassante: morbus igitur oriundus est ab aliqua alia manifesta et obvia aëris facultate, id est, ab ejus frigore. Et quod notatu dignum est, apud omnia testimonia a Doctore LIND allata, ut probet aquam in aëre, et non frigus, esse principem causam praedisponentem scorbuti, verbum Anglicum *cold* plerumque non tan-

* Epidem. lib. iii. sect. 3.

† De temperam. lib. i. cap. 4. et Com. in Epidem. lib. iii.

‡ De medicin. lib. i. cap. ii. p. 22. cap. v. et x.

|| Lib. vi. v. 1099. 1100.

** Bibliothec. hist. lib. xiv. cap. 70. 71.

†† De medicin. Ægypt. lib. i. cap. 14. et 15.

‡‡ De nox. palud. effluv. lib. 2. Epid. i.

|||| Discourse on the plague.

† Diseases of the army, edit. 6. part i.

tum adest, sed etiam primum locum tenet; nihilominus tamen aquam solam fere semper reprehendit *.

IPSE quidem ubique, in suo tractatu, facile concedit frigus quando aqua conjunctum, vim ejus perniciosam multum augere posse; simul autem adeo sibi persuasum habet, aquam in aëre esse causam maxime praedisponentem, ut contendat eam per se facere morbum posse †. Contra vero, negat ex toto frigus per se, sine aqua in aëre, unquam scorbutum generare posse, nisi forte ubi vehementissimum, ut in Greenlandia ‡. Nihilominus tamen idem, in alia parte ejus libri, confitetur frigus regionis certissime plurimum valuisse ad morbum gignendum; haec enim sunt ipsissima verba: *But here it may be worth while to re-*

* Vid. p. 66. 72. Mr. Murray's letter, p. 67. Mr. Ives's journal throughout, p. 94.

† Vid. p. 71. 229.

‡ P. 87. 228. 229.

mark, that in all those parts where the scurvy was formerly so peculiarly endemic, by reason of their marshy and damp situation, together with their gross unwholesome diet, the cold of the climate must certainly have contributed a great deal towards its production. For we observe, that at Venice, whose situation is as damp as most places, the disease is unknown.*

AUCTOR noster, in haec inter se repugnantia proditus esse videtur, arbitrando aquam in aëre semper abundare in omnibus regionibus ubicunque frigus adest, idque etiam pro gradu frigoris; ejus dicta enim de hac re ita se habent: “*For all these northern countries, viz. Iceland, Groenland, the northern parts of Russia, &c. are subject to great fogs, not only in summer, but in winter, and when the cold is excessive, are pestered with what is called frost-smoke; a vapour which rises out of the sea*

* P. 90. 91.

like smoke from a chimney, and is as thick as the thickest mist *.” Id citat ex narratione cujusdam JOANNIS EDGE, qui in Greenlandia vixit quindecim annos, atque tum quidem idem argumentum curiose applicat ad Icelandiam, Groenlandiam, septentrionales partes, Ruffiae, &c. †

QUOD ad illam partem Greenlandiae pertinet quam JOANNES EDGE habitabat, nescio; sed contra, fatis certum est idem minime contingere in aliis partibus Greenlandiae. Id enim evidenter manifestum est ex ephemeride tempestatis quotidie servata a septem nautis, qui in Greenlandia hibernarunt, et scorbuto perierunt; nulla mentio enim ibi facta est de vapore dicto *frost-smoke* JOANNIS EDGE. Imo contra, tantillum vaporis ullius generis in aëre tum observatum est, ut intra octo mensium intervallum, frigoribus mediis,

* P. 87. 88.

† P. 87. 229.

decem dies tantummodo nebulosi essent; quod fortasse vix dici potest, hiberno tempore, de ulla parte Magnae Britanniae. Plus deinde, simul multum de sole, de luna, de stellis loquitur, et postrema verba scribae ephemeridis erant, Diffuso lumine, coelum nitet, sol effulget, ventus ut antea—mорий*.

PRAETER haec, in variis partibus Septentrionalis Americae, prout apud urbem Quebec, hieme grassante, coelum longo temporis spatio serenum manet, tamen scorbutus tum evenit, si frigori huic sicco diaeta marina tantummodo adjicitur †. Idem recte dici potest de pluribus partibus Russiae, Tartariae, Lapponiae, Suediae, Norvegiae, in quibus, hieme manente, omnia stagna tunicam crassam glaciei induunt, per quam nihil humidi

* Churchill's collect. of voyages, vol. 2. p. 349.

† Monro's diseases of British military hospitals, p. 251.

penetrare potest, tota summa terra omnino gelu et nive obferatur; nihilominus tamen, hoc ipso tempore, scorbutus non tantum se ostendit, sed etiam morbus quam maxime popularis et terribilis est. Contra autem, simul ac calor aquam vinculis solvit, scorbutus celeriter fugit, quamvis aër tum multo magis humore gravis est quam prius, morbi que generis plane diversi tum superveniunt, prout febres et intermittentes, et remittentes, et tormina ventris. Quae omnia quidem, ex literis JOANNIS COOK ad ipsissimum LIND, clare apparent*.

UT veniamus autem propius ad gradum frigoris plerumque necessarium ad scorbutum creandum, in navibus bellicis Britannicis, non ex toto alienum a proposito meo fit, mentionem facere eorum quae ipse de hac re di-

* Treatise on the scurvy, p. 276.

dici. Experimenta igitur a me facta de calore et aqua in aëre, et freto in Anglico, et oceano in Atlantico, et in mari Mediterraneo, et sub coelo Caribbaeo, docent me dicere, scorbutum ubique terrarum in navi sub diaeta marina oriri posse, quandocunque argentum vivum in thermometro Fahrenheitiano infra numerum sexagesimum concidere, sive aër ficcus, sive humidus est. Contra vero, ubicunque terrarum calor aëris adeo magnus est, ut semper attollat argentum vivum supra numerum septuagesimum, morbum rarissime futurum esse, quamvis aër tum aqua maxime gravidus, et navigantes quoque sub diaeta marina sunt.

Ex dictis igitur plane patet, frigus in aëre, et non aquam, esse principem causam praedisponentem scorbuti; atque hanc aquam tanto laedere in scorbuto, quanto vel plus vel minus frigore miscetur.

Vis ficcans aëris frigidi bene cognita est
poëtis, cum antiquis, tum recentioribus, at-
que apud eos graphice depingitur; sic enim
canit Virgilius Maro,

*Ne tenues pluviae, rapidive potentia solis
Acrior, aut boreae penetrabile frigus adurat.*

Georg. lib. i. v. 92. 93.

NEC minus quidem eleganter Homerus
noster Britannicus;

————— *the parching air*

*Burns frore, and cold performs th' effect of
fire.*

B. ii. ver. 594. 595.

IDEM Miltonus divinus ejusdem rei men-
tionem fecit alio in loco operis, ubi Angelus
Michaël jubet Adamum, hominum primum,
observare, quid insuper futurum sit!

*He look'd and saw the ark hull on the flood,
Which now abated; for the clouds were fled,*

Driv'n

*Driv'n by a keen north wind, that, blowing
dry,*

Wrinkled the face of deluge, as decay'd.*

B. xi. ver. 840. &c.

HAEC de aëre. Nunc igitur veniendum est ad cibos potionefque nautarum Britannicorum. Haec vero omnia fere mali succi sunt, caro bubula fuillaque falsa, panis biscoctus, pollen tritici avenaeque, pisum, butyrum salitum, caseus vel durus vel salitus; pro portione autem cerevisia tenuis, vinum, spiritus ardens cum aqua dilutus. Haec est diaeta marina.

Ex omnibus his caro pessima est, five vero id sit propter salem, ut alii contendunt †;

* Paradise Lost.

† Boerh. institut. § 760. Van Swiet. comment. in aph. Boerh. § 1153. Linnæus's letter to Dr. Lind in treat. on scurvy, p. 282.

sive propter carnis ipsius corruptionem, ut alii *; sive propter utrumque, ut alii †; non controversiam movebo: sed ita rem se habere multa exempla docuerunt.

“BATAVI cum hiemali tempore pisces falsamentarios familiaque in deliciis habeant, imo recentes carnes fastidiant plurimi, frequentius scorbuto laborant ‡.”
Methodicus LINNAEUS memoriae prodidit, scorbutum apud Suecos, imprimis apud plebeios, frequentissimum morbum esse; eosque qui per longam hiemem cibis falsis, carnibus falsis, et imprimis halecibus falsis sustentantur, eo laborare; contra vero Lappones, qui fere omnes ignorant falsi usum in cibo, a scorbuto immunes vivere ||.

* Diseases of the army, by Sir John Pringle, edit. 6th. append. p. xci.

† Van Swiet. com. § 1150. Lind, p. 51.

‡ Van Swiet. com. § 1150.

|| Letter to Dr. Lind, p. 282.

Hieme proxima post captam urbem Quebec, duce peritissimo fortissimoque WOLFE, qui animam cum sanguine pro patria splendide fundebat summo illo Monte Abrahamo, exegitque illic famae monumentum aere perennius; scorbuto victores correpti sunt*. Id ipsum vero maxime ex cibo falso evenisse, scire licet, quoniam hieme sequente, milites carnibus frigore solo conditis utentes, salvi ex toto manserunt.

Ex caeteris cibus vero, butyrum salitum et caseus pessima sunt; pisum, triticum, meliora; avena autem panisque biscoctus, optima. Butyrum, ab oleo ejus rancido saleque conjuncto, maxime laedit; et caseus si mitis, fere durus et ficcus est, ac itaque aegre concoquitur; si acris autem et vetus est, vehe-

* Monro's diseases of Brit. military hosp. p. 251.

menter malum auget †. Tritici pollen aqua subactum decoquitur, et quamvis sevo, vel uvis minoribus majoribusve mixtum, ut plerumque fit, tamen et grave, et tenax est, difficileque digeritur. Pisum decoctum lene est, sed inflationes creat, maxime in imbecillis corporibus. Avenae decoctum, succum quodammodo chylo aemulantem praebet; nihilominus tamen, nostri saepius id ipsum respuunt. In pane plus alimenti est, quam in ullo alio; nautae enim est quasi sustentaculum vitae, ad quod semper confugere potest, ubi caeterum genus cibi vel corrumpitur, vel deficit; interdum vero ipse vitiatur, aut mucore, aut insectis, ac tum quidem infortunium magnum nautis est. Omnia haec dicta corpus ficcant, spiraculaque ejus astringunt; atque igitur alvus navigantium fere semper plus minusve compressa est.

† Van Swieten, com. § 1160.

Ex potionibus vero, cerevisia tenuis primum locum tenet, et ubi bona nobilis liquor nauticus est; dolendum autem quod cito corrumpitur, ideoque rarius nisi maribus Britanniae circumjacentibus utenda. Vinum, plerumque rubrum, in mari Mediterraneo frequens est, aliter rarius vel nunquam invenitur; corpus multum reficit, stomachum juvat, alvum autem astringit, assumitur bis die ad quantitatem octo unciarum. In omnibus caeteris regionibus, spiritus ardens cum aqua dilutus pro potione est, similiter datur bis in die ad numerum quatuor unciarum, aquae vero duodecim; atque tum nostris nominatur *Grog*: potus primum inventus a summo illo praefecto navali VERNON, magnique aestimatus nautis, liquorem enim vitae eum ipsum vocant. Quamvis enim spiritus ardens, vel per se, vel liberaliter assumptus, maxime noceat, ut LIND contendit*; vel

* Treatise on the scurvy, p. 81.

quia parum aëris fixi generat, et separationi ejusdem ab alimento obstat, ut MACBRIDE*; nihilominus tamen, dilutus aqua et mediocriter assumptus, fibras laxas spissat, stimulat, stomachum juvat, aquam saepius putridam pro potione communi usam corrigit, ideoque nomine liquoris vitæ apud nautas non omnino indignus est.

Si quisquis nunc hic sistitur, et recte in animo volvit revolvitque naturam, et cibi, et potionis nautae Britannici, facile videbit quod in illo, nihil vix est nisi quod aut cito et sponte putrescit aut aegre digeritur, et in hac, tantum haeret quod putredini obstat. Itaque ad morbum praecavendum, necesse est vim antiputrescentem aquae, potus communis nautarum, maxime augeri, et res demum perficitur. Id autem optime praestat succus, aut aurantiorum, aut limoniorum, spiritu ar-

* Exper. essays, p. 186.

dente mixtus, multaque aqua dilutus, et hominibus datus ter in die eodem modo quo liquor *Grog*, ita ut ex toto pro potu communium nautarum fit cerevisiae tenuis instar. Atque inter bibendum, si est, saccharum addatur, et tum quidem succus fit, filiis Neptuni minime indignus.

Sic enim nautae liquorem habent quotidie assumptum, qui stomachum leniter et jucunde stimulat, alvum emollit, urinam movet, et per ea itinera quodcumque noxium est expellit, ubicunque frigus invisibilia foramina cutis pulmonisque aliquantum claudit, ut fit in omnibus locis frigidis quos scorbutus plerumque infestat. In eodem succo quoque vis inhaeret, corrigendi, mutandi, et destruendi materiam putrescentem intus retentam, aequae ac eam dissipandi per vias supra dictas. Qualis liquor saluber igitur quotidie tam liberaliter assumptus, expectationem

pectationem nostram, ad praecavendum morbum navigantibus tam perniciosum, vix fallere potest. Accedit ad haec, quod idem ipse potus omnibus aliis morbis venientibus occurrit qui a quocunque putrido oriuntur, et ex quibus solis, si verum est quod memoriae proditum fuit, octoginta sex millia et sexcenti hominum navigantium, et plus etiam, manente bello proximo, perierunt*. Igitur omnibus maritimis gentibus id ipsum propono, quam maxime autem tibi, O Britannia! omnis commercii magistra.

A DIAETA marina ad olera, fructus, et hujusmodi similia, quae navigantibus defunt, transitus facilis est. Via longa et flexuosa intestini humani, moram bene longam cibi assumpti significat. Hac autem mora in loco tepido, humido, omnia assumpta celeriter ad putredinem spectant, quam maxime autem

* Macbride, p. 173.

caro omnis generis. Itaque summus omnium conditor, a sapientia sua optima, herbas fructusque, pro usu humano, ex terra fudit, et tum dixit, Accipe, ede; in ipsis enim creaverat vim depellendi quodcunque putridum est, et sic vitam hominis protrahendi. Haec enim, ubi materia cum ulla putrescente in loco tepido humido, sicut in ventriculo humano, coëunt, vaporem subtilem, volatilem, activum emittunt, qui substantiam totam penetrat, et putridum quod ei inhaeret mutat, tollit, habitumque ejus nunc laxum firmat, ut experimenta aurea JOANNIS PRINGLE Baronetti *, et DAVIDIS MACBRIDE †, nitide docuerunt.

IDEM autem vapor, ut res videtur, per totum corpus fertur, et mirandum auditu! quod semel volatile erat nunc fixum est, et fit quasi vinculum omnium corporis humani

* Appendix to diseases of the army.

† Exper. essays,

partium: cum enim quidē rursus avolat, durissimae etiam subito solvuntur. Quae omnia fane, ingeniosissimus seculi nostri vir, quem nuper vidimus, STEPHANUS HALES, eleganter demonstravit; ille enim primus omnium ex vinculis ejus vaporem aëreum solvit, ac sensui humano recte exposuit †.

CUM itaque homines navigantes his vinculis vitae nimis saepe orbantur, et carnem falsam et similia putrescentia edunt, nil mirum est, quod corpora sua tali corruptione solvantur qualis in scorbuto est.

NEQUE quidem ratio latet, cur malum, herbis folis adhibitis, saepe tam cito finiatur: cujus rei satis insigne testimonium memoriae prodidit clarissimus BACHSTROM. Siquidem nauta quidam Batavus, cum, in nave ad Groenlandiam appulsa, hoc morbo jam adeo

† Vid. Staticks, vol. i. and ii.

oppressus esset, ut nec manibus nec pedibus valeret, nihilominus tamen herba cochlearia, pecudum more, pastus, intra paucos dies ad sanitatem corpus ejus venit*.

ITEM ratio patet cur caro jurulenta cum oleribus tam celeriter morbum tollit; quoniam multum alimenti vinculorumque vitae simul corpori dat, ventrem etiam solvit, et urinam et sudorem movet, et sic per haec itinera vitium ex corpore pellit, et in auras diffiat. Caro jurulenta verum sine olere morbum aegre tollit, quia tantummodo corpus alit, sed, per se, non satis vaporis anti-putrescentis ei praebet; atque ipsa quoque cito ad corruptionem spectat, neque tam facile vias corporis resolvit, ut intus malum exeat.

DEMPTO autem omni olere, scorbutus tamen non semper tam cito sequitur, quam

* Observ. circa scorbut. p. 8.

JOHANNI BACHSTROM visum est * ; ut judicare licet, ex iis hominibus quos mala fortuna in Greenlandia, sine olere, sine herba ulla hibernare cogebat ; tota terra enim gelu et nive semper alba erat, tamen vixerunt, et etiam sanis corporibus †.

HAEC sequuntur causae morbi magis remotae, quarum precipuae sunt, tristitia, timor, immunditia tum corporis tum vestimenti, homo male vestitus, imbecillitas vel a morbo vel a quacunque alia causa oriens, corpus inexercitatum. Ea omnia quidem, spiracula cutis plus minusve claudunt, materiam noxiam putridam in corpore sensim sensimque retinent, accumulunt, ideoque quantum fieri potest vitanda sunt ; quam maxime autem corpus inexercitatum.

* Observ. circa scorbutum.

† Church. collect. voyag. vol. iv. p. 746.

OMNES boni navarchi semper munditiam student, et in navi ipsa, et in hominibus; atque propriis oculis haec omnia probe observant.

VESTIMENTIS idoneis vacare, magno malo est navigantibus, eos enim multis morbis obnoxios reddit, praecipue vero in frigidis locis; experti nautae id ipsum optime norunt, de hac re enim semper studiosi sunt. Atque quidem optandum est, ut qui rebus maritimis nostris praesunt, vel omne genus vestimenti navigantibus suppeditarent, sicut in exercitu factum est; vel certe, ut unicuique homini subuculam laneam fortem cum manicis, simulque calceamenta fortissima darent. Sic enim summa cutis, a frigore in hisce partibus defenderetur, et venienti morbo occurreretur: accedit ad haec, quod, quandocumque pedes frigent, totus homo friget.

QUOD ad exercitationem vero pertinet, supra dixi sudorem esse vitam ipsam navigantium †, et nunc id repeto; ab eo enim, morbus in incunabulis quasi jugulatur, et ventis datur. Semper igitur juvat sudor, five calore solis, five motu elicitur; ideoque omnia corporis exercitationum genera profunt, maxime autem sub divo, et quae mentem simul hilarant.

EXIGUUM quidem spatium exercendi in navibus plerumque est, oportet igitur homines, id ipsum supplere, callidis suis inventis; ut olim fecit fortissimus ille dux EUMENES, ad servandam pulchritudinem valetudinemque equorum suorum, ubi in castellum Phrygiae, quod, nora appellatur, confugit. “ In quo, cum circumfederetur, et vereretur, ne, uno loco manens, equos militares perderet, quod spatium non esset agitandi; callidum

† Vid. p. 9. et 44, 45.

fuit ejus inventum, quemadmodum stans jumentum calefieri exerceri que posset, quo libentius et cibo uteretur, et a corporis motu non removeretur. Substringebat caput loro altius, quam ut prioribus pedibus plane terram posset attingere; deinde post verberibus cogebat exultare, et calces remittere: qui motus non minus sudorem excutiebat, quam si in spatio decurreret. Quo factum est, quod omnibus mirabile est visum, ut jumenta aeque nitida ex castello educeret, cum complures menses in obsidione fuisset, ac si in campestribus ea locis habuisset *."

NAVIGANTES autem commode exercent, ambulatio, saltus, cantus, arma, bellique simulacra, quae semper praefectis navis excitari debent.

SEMPER autem in memoria tenendum est, quod ut labor venientem morbum recte pug-

* Corn. Nep. vit. Eumen.

nat, sic quodocunque scorbutus jam adest, periculosissimus fit; multi enim, tunc temporis id perficiendo, subito extincti conciderunt*. Igitur, ubicunque scorbutus incipit, tum omnis vehemens motus corporis finiri debet; atque id quidem nos ducit ad ipsam morbi curationem.

CAPUT VI.

De curatione morbi.

DIXI de natura et causis mali, nunc transeundum est ad ipsam curationem. Atque ut in historia morbi, de illo in totum tractavi prout in mari se mihi ostendit nostris in navibus bellicis; sic etiam, de ratione mendi quam inveni his optime respondisse in alto, tantummodo dicam.

* Anson's voyage, p. 142.

AB experimentis aliorum incipiam, et imprimis KRAMERI; viri in hoc morbo experientissimi. Ille enim, cum multiplicem medicinam auctoribus decantatam contra hoc malum tentasset, ast proh dolor incassum! tunc demum, ab experientia sola invenit, corticem Peruvianum multum praestitisse, succum autem aurantium et limoniorum saccharo in testis conditum, morbum per se ex toto solvisse †.

NUPER vero, expertissimus chirurgus JOHANNES HODGKIN ad classim regiam perti-
nens, haec duo, sub diaeta marina, recte conjunxit; duabus enim vel tribus septimanis elapsis, morbus vel ex toto desit, vel certe parum nocuit. Haec medicina autem sic utenda: alvus si astricta leniter movenda est, tum drachma una corticis Peruviani cum un-

† Kramerii disput. epist. de scorbut. Norimberg, 1737.
See Lind also, p. 160. (r)

cia una fucci limoniorum ter in die danda est, et membra aegri nocte maneque cum aceto bene fovenda sunt; haec quotidie servanda donec morbus ex toto solvitur.

Ego quoque id ipsum in alto mari navi diu haerente, cum fructu expertus sum. Succus etiam aurantium idem aequae praestat ac is limoniorum. Pulverem vero corticis Peruviani interdum nocere inveni, ubi difficultas spirandi aderat; quae fere semper in morbo vetustiore fit. Itaque pulverem tum rejeci, et tincturam praecepi quae habuit corticis Peruviani uncias duas cum semisse, myrrhae semunciam, spiritus vini Gallici libram unam: hujus tincturae semunciam dedi ter in die, cum uncia una fucci vel aurantium vel limoniorum mistae, et optime respondebat, quamvis spiritus difficultas tum aderat.

QUAERI potest, cur spiritus, pulvere adhibito, gravior redditur; tinctura autem minime? modum operandi quidem ex toto ignoro, sed oriri videtur ex quodam quasi consensu inter ventriculum et pulmonem; cito enim res evenit, antequam quid pulveris vix vel ne vix vasa absorbentia intrasse potest. Idem quodammodo observare licet in quibusdam hominibus, vel nucibus vel amygdalis assumptis, paulo post enim spiritus multo gravior fit. Sin vero contra, horum emulsionum assumuntur, res minime ita se habet, sed potius adjuvant pectus, quam gravant. Si autem ullo tempore cortex Peruvianus hoc in casu laedit, aut sub specie pulveris, aut tincturae, semper rejiciendus, et succus per se utendus.

PLACUIT tentare, num cortex Peruvianus idem aeque proficeret in hoc malo cum aliis acidis, ac cum succo aurantium et limoniorum

orum conjunctus. Itaque aliis corticis drachmam unam ter in die dedi, cum elixir vitrioli acido; aliis, cum spiritu sulphuris; aliis, cum spiritu falis marini glauberi; aliis, cum cremore tartari in aqua soluto. Haec omnia vim morbi, pari fere cum successu, coërcere videbantur; sed tamen malum non curabant. Tinctura supra dicta, cui drachma una camphorae et croci adjecta erat, paulo melius respondebat, ubi data ad mensuram semunciae ter die in unciis quatuor aquae in qua cremor tartari solutus est.

DENIQUE autem, ea omnia jam propofita, plurimum a succo aurantium et limoniorum virtute aberant. Ex his igitur intelligi potest, ut cortex Peruvianus bono praesidio scorbuto fit, at non per se idoneus ut morbum tollat. Ideoque spes nostra praecipua, in alto mari navi ubi omnia olera defunt, in succo aurantium et limoniorum maxime ponenda.

ponenda. Sequitur etiam exinde, succum eundem, cum potu communi nautarum mistum et quotidie assumptum, ut supra comprehensum est, ad praecavendum morbum optimum esse. Si enim scorbutum tollere potest, cur non praecavere?

Ex quo didici in itinere ad Indiam, de morbo praecavendo per sudorem*, recte cognovi evacuationem per vias cutis, in malis curatione quoque efficacissimam futuram. Igitur id ipsum tentavi medicamento, quod aliis in casibus frequentissime sudorem movisse compertus sum, facto ad similitudinem elixir paregorici pharmacopoeiae Londinensis. Constat ex gummi benzoini, opii, croci, singulorum drachma una; camphorae, olei anisi essentialis, singulorum scrupulis duobus; spiritus vini Gallici libra una, simul digestis et colatis.

* Vid. p. 44, 45.

Hoc medicamentum, ex effectibus ejus, elixir sudorificum nominavi, rarissime enim me fefellit in sudore eliciendo. Adhibitum erat omni nocte, ab una drachma ad semunciam, pro re nata, ex paululo decocti rasurae ligni abietis communis, dum aeger in lectulo calido se continebat, et post id libram unam ejusdem decocti tepidi bibit. Abietis decoc- tum, quoque dedi scorbuticis pro potione communi; quod iis pergratum erat, et liber- aliter assumptum. Hoc modo sudore elicito, membra rigida, dolores scorbutici, difficultas- que spirandi multum levata sunt; adeo ut aeger, dum morbus ingravescebat, haec prae- sidia semper omni nocte dari exoptaret.

IDEM elixir etiam maxime prodest in multis aliis morbis navigantium, prout fe- bribus ex frigore orientibus, similibusque; praecipue autem cum aliquid collisum fit, quod frequentissime in navibus evenit. Ubi
primum

primum enim inflammatio, sanguinis detractio, cathartici refrigerantibus, aliisque auxiliis, paululum se remittit, deinde elixir recte datur, et magnopere adjuvat sudorem movendo, et sic mali reliquias per foramina cutis depellendo.

QUANDOCUNQUE multi in nave scorbuto laborantes sunt, et alia auxilia defunt; satis aquae, in qua, rasurae ligni abietis communis decoctae sunt, semper in dolio servari, et potui assidue dari oportet. Id ipsum enim, per se fortassis, non raro morbum, aut levare, aut solvere potest; quam maxime autem, si huic, vel saccharum rubrum, vel praecipue ejusdem faeces, quas nostri, *molosses*, vocant, adjectae sint: sic enim potus, in alto mari, semper in promptu sit, eam cerevisiam quodammodo repraesentans, quae Anglicè, *spruce-beer*, appellatur; praesidium, hercules, contra id vitium, valentissimum.

SUB hisce curationibus, si alvus per se mollis non est, neque satis reddit quotidie, tum semper solvi medicamentis lenissimis debet; quale est infusum senae cum cremore tartari, qualis est manna, quale est rhabarbarum, qualis est aqua marina, qualis est cremor tartari cum melle vel electario lenitivo * mixtus. Si fortiore autem opus est, partes tres salis nitri cum una radicis jalapii, aut partes quatuor cremoris tartari cum una ejusdem radicis, commode dari possunt. Sin vero longo temporis spatio venter compressus fuit, lotionibus ex aqua marina cum oleo, similibusque, melius incipere est.

DENIQUE hac ratione medendi, omnia itinera corporis aperiuntur, per quae multum materiae putridae morbi jucunde evacuatur, et quae intus restat, corrigitur, mutatur, innoxiaque redditur, vi antiputrescente succi

* Pharm. Lond.

fructuum et corticis; vires aegri excitantur, morbus paulatim definit, et intra paucas septimanas evanescit, nisi cum aliquo alio malo conjunctus, ac tum quidem medicina magis longa, et multiplex fit.

QUOD ad cibum vero aegrotantis pertinet, scire licet, falsa omnia a primis diebus semper rejicienda, et laborantem, ea parte dietae marinae quae ex frumento venit, tantummodo uti debere. Si vero est, unciam unam juris portabilis in aqua soluti, assumere quotidie potest aegrotans, in qua, vel hordeum, vel oryza, vel avenacea farina decocta est.

JUS portabile factum est ex carne bubula in aqua decocta, tum inspissata donec sicca fit, deinde in placentas quadratas formatur; adeo ut facile portari, et bene servari possit per plures menses, si modo in loco sicco positum sit, et interdum aëri aperto committatur

tur. Hoc jus aegrotis in classi regia conceditur, per liberalitatem magnam Regis, et sapientiam eorum qui rei navali praesunt. Antequam adhibetur, semper linteo bene abstergendum; quoniam farinam viridem amarum, stomacho noxiam contrahere solet. Primum quoque per se decoqui debet, in paululo aquae communis, et si quid materiae supra tum innatat caute auferendum est, deinde farinario decocto supra dicto miscendum. Ceba, allium, uvae minores, et similia, si in promptu sunt, huic decocto recte adjici possunt.

PRAETER haec praesidia quae universa sunt, alia magis propria inveniuntur, ut nova res desideret. Non raro enim, inter principia morbi, dolor acutus pectoris est sine febre; hoc in casu sanguis recte mitti potest ad sex vel octo uncias, plerumque enim protinus levat. Opus autem vix impune repetatur,

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vel

vel certe, ut judico, fatius est emplastrum vesicatorium ei quod affectum est admovere, ut per ulcus morbus erumpat. Ipse quidem nunquam inveni rem hoc postulantem; sed video clarissimum ROUPPE vesicatoria satis magna, doloribus scorbuticis recte praecepisse*.

Si quid offensae in stomacho est, quod rarius fit, vomitus ex radice ipecacoanae, aut ab oxymele scillitico, tuto dari potest; saepe enim stomachum et pectus simul adjuvat.

DIFFICULTAS spirandi vero, periculosissimum illud indicium scorbuticorum, optime plerumque curatur succo aurantium et limoniorum, vel per se, vel sub specie syrapi liberaliter dato; alvo tamen simul leniter so-

* De morb. navigant. p. 200.

luta, et sudore omni nocte elicto per vim elixir sudorifici et decocti abietis.

DYSENTERIA, aut torminibus, intestina rarissime ex natura morbi excruciantur, nisi post longum spatium interpositum, ubi vitium multum increvit, et vires aegri convelluntur, et tunc quidem fere semper mortifera est; in medicina enim vix ulla spes superest. Ubi autem aliter res se habet, morbus omnino curandus est, ut in omnibus aliis dyfenteriis a putrida causa orientibus, sic tamen, ut aeger semper reficiatur iis medicamentis quae et viribus subveniunt, et simul putredini obstant, et, ut materia morbi, quantum fieri potest, ad summam cutem versus deferatur. Et fortasse non ex re erit, quotidie succum aurantium et limoniorum in membra saepe perfricare, adeo ut in itinera sanguinis intret sine ulla noxa intestinis, quod vix fieri nunc potest, si in os acceptus esset.

effet. Hoc autem ex conjectura solummodo praecipio, quoniam usu inveni, idem extrinsecus impositum magnopere prodesse doloribus tumoribusque in membris scorbuticorum, quod vix evenisset nisi in sanguinem receptum. In ejusmodi casibus quoque, super vaporem aceti bene calidi sedisse juvat. Id quidem recte, vel pruna, vel latere, vel feramento ignito in succum demisso; aut etiam aceto super idem leviter asperso, fieri potest. Interea ascendit calidus vapor, qui, torminibus ventris opitulatur. Haec enim res, per se quidem, non raro morbum ex toto solvit, ut experientissimus ille vir JOANNES WOODALL memoriae prodidit. Eadem curatio autem melius respondet, si, finito vapore, linteam bene calefactum, supra id, quod affectum est, protinus imponatur, medicamentumque somnum movens jacenti simul detur*.

* The Surgeon's Mate, or military and domestique Surgery, London, MDCXXXIX, p. 25, 26.

QUOD ad ulcera scorbutica pertinet, commodissime cedunt praesidiis universis, supra comprehensis, intrinsecus; et linamento sicco extrinsecus, cum levi compressione; vel si multum putredinis est, eodem, ex tinctura myrrhae aut corticis Peruviani, expresso. Ubi autem ulcus grande est, doletque, cataplasma ex farina avenacea, in aceto et aqua decocta cui paulum olei adjectum fit, nunquam non super imponi hisce debet.

DOLORES tumoresque scorbuticos vero recte pugnat acetum, aut per se, aut potius cui paululum olei olivarum aut linimenti saponacei * est adjectum; quam maxime autem, si est, succus aurantium vel limoniorum eidem oleo additus. His equidem id, quod affectum est, leniter et bene ter vel quater in die perfricari oportet.

* Pharm. Lond.

QUANTUM is succus prodest doloribus scorbuticis, primum didici apud insulam Melitam: navis enim Vestalis regia, cum huc atque illuc navigavisset per plures septimanas, tempore hiberno, in illa parte maris Mediterranei quod VIRGILIUS Ionium nominat, in portum rediit, multis hominibus scorbuto laborantibus. Quidam autem nostrorum, vel natura, vel fortuna, vel ratiocinatione ducti, succo horum fructuum tumores dolentes quotidie perfricarunt; atque sic multo celerius melius se habuerunt, quam qui aceto tantummodo usi sunt.

HAEC insula quidem, non minus benigna nobis tunc erat, quam olim sancto PAULO magnanimo illi heroï fidei christianae, ubi ipse catenis vinctus, ab Hierosolymis Romanam missus erat, ut, coram Caesare, causam suam diceret. Praebuit enim ei Barbaros, qui, non vulgarem humanitatem, praestabant;

bant; praebuit item nobis mala citrea aureaque optima, praebuit olera omnis generis, praebuit bubulam, praebuit panem marinum bonum, praebuit aquas dulces, adeo ut, his adhibitis, omnia nostra mala cito fugerent.

DENIQUE, gingivae scorbuticorum nullam medicinam minime desiderant. Plerumque enim a primis diebus afficiuntur, nautaeque in curatione earum experimenta faciunt, (empirici enim in mari, aequae ac in terra sunt), perfricando eas sale, cinere tabaci, similibusque, donec tandem omnino fere eadem fricatione consumpserunt; adeo ut frequenter mihi venerunt vultu horrifico praesidium petentes, omnibus dentibus capite vacillantibus. Gingivae vero nunquam fricari debent pulvere quocunque; non raro enim quidem adeo tenerae sunt, ut levi tractatu statim deliquescant. Medicina autem facilis est, et quae nunquam fefellit. Ubi enim

enim gingivae cruore atro turgent, admoto scalpello, protinus erumpit, deinde os aqua hordeacea cui paulum aluminis et tincturae myrrhae adjectum est, ter quaterve interdium bene fovendum, atque sic totum opus cito finitur. Aliquando gingivas sibi reliqui, nullo remedio extrinsecus admoto, atque intra aliquot dies, nautae simplices multum mirati sunt cogitare, quomodo praesidium in stomachum acceptum, rursus ad gingivas, et rediret, et sanaret.

NUNC propositum meum perfeci, et per totum opus, intrare tentavi in abdita quasi et penetralia morbi, quo facilius ejus latebras et recessus patefacerem, omnibusque exponerem; quod si recte peregi, mihi abunde est; sin minus, humanum est errare. Porro autem, si animus me non fefellit, ex dictis manifestum est, scorbutum in alto

mari non tantum praecaveri posse, sed curari quoque, quod equidem votum est; idque etiam viâ quâ ASCLEPIADI placuit, id est, et tuto, et celeriter, et jucunde.

FINIS.

A

P R O P O S A L

FOR PREVENTING THE

S C U R V Y

IN THE

BRITISH NAVY.

T O

THE RIGHT HONOURABLE
SIR EDWARD HAWKE,
KNIGHT OF THE BATH;
FIRST LORD OF THE ADMIRALTY,
ADMIRAL OF THE FLEET,
&c. &c. &c.

SIR,

YOUR well-known Experience in all Naval Affairs, and the high Rank you bear in the Civil, as well as in the Military Department; have induced me to take the Liberty of prefixing your Name to the following Proposal: And if I should be so happy therein, as to have thrown out the least Hint, which may any way tend to promote the Welfare of the British Navy; it will greatly add, to the Pleasure I have, in the Honour of subscribing myself,

SIR,

Your most obedient,

And most humble

Servant,

NATHANIEL HULME.

*This is a wonderful secret of the power
and wisdom of God, which hath hidden so
great and unknown virtue in this fruit, as
to be a certain remedy for this infirmity.*

Sir Richard Hawkins's Voyage.

A
P R O P O S A L

FOR PREVENTING THE

S C U R V Y

I N T H E

B R I T I S H N A V Y.

GREAT-BRITAIN, perhaps, never shone with so much splendour, as during the late war; owing to the bravery of her fleets and armies: but, being surrounded with water, her fleets are justly looked upon as her chief bulwark and support. These are the very wooden walls, which the Delphian oracle, of old, declared to be the only defence of the Athenians, against XERXES'S

B

mighty

mighty army, of two millions one hundred thousand men! *

Now the strength of her fleets is in her men, whose hearts are always steeled with courage, if not broken down and lowered by disease; which, generally, is more destructive to them than the sword of the enemy. And of all the disorders to which they are peculiarly subject, none is more alarming than the scurvy; which, indeed, may be considered as the bane of seamen.

EVERY attempt, therefore, entirely to prevent so fatal a calamity, can hardly fail of being acceptable to the publick. Such is the design of the following proposal; which, however, is in no wise meant to offer any thing new to the world, but only to enforce

* Rollin's Anc. Hist. b. vi. c. 2.

what hath been recommended by others*; and apply it in such a manner, as to render it capable of answering effectually every great end for which it is designed.

WHAT I would propose then, is nothing more, than that orange or lemon juice and sugar, should be so mixed with spirits and water, or wine and water, where small beer cannot be had, as to become, in a manner, the common drink of sailors, when at sea. Perhaps it may be said, that orange and lemon juice and sugar, with spirits and water, or wine and water, are drunk by every body; and how can such a simple liquor as that prevent one of the most terrible diseases, the scurvy? To this it may be answered, that repeated experience hath taught us, that flesh broths with com-

* By John Woodall, in his Surgeon's Mate; by Dr. Huxham, in his Appendix to Fevers; by Charles Bisset, in his Treatise on the Scurvy; but more particularly by Dr. Lind, in his Treatise on the Scurvy; part ii. chap. iv.

4 A PROPOSAL for

mon greens boiled in them, have quickly removed the scurvy, when all medicines have failed: yet every one feeds on broth and greens, and doth not observe much change made in his body thereby. Add, that nature loves to work, by simple, hidden ways.

Now orange, or lemon juice, is likewise found to cure the disease, as we know from manifold experience; and certainly what will cure the disease when once formed, will be the likeliest to prevent it.

KRAMER, a man of great experience in this malady, observes that “the scurvy is the most loathsome disease in nature; for which, says he, no cure is to be found in your medicine chest, no not in the best-furnished apothecary’s shop. Pharmacy gives no relief, surgery as little. Beware of bleeding; shun

shun mercury as a poison: you may rub the gums, you may greafe the rigid tendons in the ham, to little purpose. But, if you can get green vegetables; if you can prepare a sufficient quantity of fresh noble antiscorbutick juices; if you have oranges, lemons, or citrons; or their pulp and juice preserved with sugar in casks, so that you can make a lemonade, or rather give to the quantity of three or four ounces of their juice in whey; you will, without other assistance, cure this dreadful evil*.”

LORD DELAWAR, who had suffered greatly by that disorder, in the relation of his case to the Lords and others of the council of Virginia, at a court held the 25th of June, 1611, hath these words: “I steered my course for the Western Islands,

* *Krameri medicina castrensis*; as quoted by Dr. Lind, on the scurvy, p. 160.

which I no sooner recovered, than I found help for my health, and my sickness assuaged, by means of fresh diet, and especially of oranges and lemons; an undoubted remedy and medicine for that disease, which lastly, and so long, had afflicted me*.”

THE late Lord ANSON, in his voyage round the world, on his arrival at the island of Tinian, landed a hundred and twenty-eight men sick of the scurvy. Numbers of these were so very helpless, that they were obliged to carry them from the boats to the hospital upon their shoulders; yet the diseased in general, reaped so much benefit from the fruits of the island, particularly limes and oranges, that, in a week's time, there were but few of them who were not so

* Purchas his Pilgrimes, vol. 4. p. 1763.

far recovered, as to be able to move about without help*.

Sir RICHARD HAWKINS, who used the sea for twenty years, and who was able to give an account of ten thousand men consumed with this disease, allows oranges and lemons the first place in the cure of the scurvy. And he was so far convinced, by repeated experience, of the efficacy of these fruits, that, in a voyage to the South-Seas in the year 1593, being over-run with the scurvy, he put into a port on the coast of Brazil; craving nothing for his assistance but oranges and lemons, and some trifling matters for refreshment. So the Captain, who was sent ashore, got two or three hundred oranges and lemons, and some few hens. "Coming on board of our ships," says the good Knight, "there was great joy amongst

* Anson's voyage round the world, Lond. 1749. p. 414.

my company, and many, with the sight of the oranges and lemons, seemed to recover heart: This is a wonderful secret of the power and wisdom of God, which hath hid- den so great and unknown virtue in this fruit, as to be a certain remedy for this in- firmity*.”

Now I humbly presume, that the most powerful and principal cause of the scurvy, is not in the weakened spring, or foulness of a ship's atmosphere, as MEAD contendeth †; nor yet in the moisture of the air, as LIND ‡; but in the diet of our seamen. If this then can be so far improved, as to ob- viate the bad effects arising from thence; the other causes, in all human probability, will

* Purchas, vol. 4. p. 1378.

† Discourse on the scurvy, p. 99, to 103.

‡ Treatise on the scurvy, Edit. 2. p. 68.

be inconsiderable, and the scurvy will rarely if ever appear.

WHOEVER therefore, will carefully revolve in his mind, the nature of the food of the British seamen; he will at once see, that there is scarcely any thing in their solid aliment, but what is either hard of digestion, or tends directly to produce bad and corrupt juices in the body; which are the very essence of the scurvy. Such is salt beef and pork, salt butter, cheese, and the like. And on the contrary, that the most healthy part of the sea-diet is in the drink alone, such as good sound small beer, wine, or spirits diluted with water. These are the very life of a sailor, without which, his Majesty could scarce have a ship remain above two or three months at sea, during a winter's cruise, without the crew being almost over-run
with

with the scurvy. Of these, the small beer, perhaps, is the best antiscorbutick liquor: for as this contains much of the fermentative principle, gently moves the belly or urine, and is made the common drink of sailors, so as never to have occasion to drink water alone; it becomes a noble drink for seamen. And hence it comes to pass, that ships, when cruising in the Bay of Biscay, have been observed to fall into the scurvy much sooner, after this wholesome liquor was expended, than while it was continued to be drunk.

IT appears very plain then, that the best way to obviate the bad qualities of a sea-diet in long voyages, where vegetable food cannot be had, will be to increase the antiscorbutical power of their drink, which, generally, is spirits diluted with water; so
that

that it may become their common drink at sea, nearly in the same manner as small beer. Now this will be most effectually done by the juice of oranges or lemons, mixed regularly with the spirits and water every day; and the addition of a little brown sugar, which, besides its power of resisting putrefaction, will make it palatable and agreeable to every constitution.

FOR as vegetables, when eat in substance, are a certain and sovereign remedy for the scurvy, so are their juices when drunk; and, in fact, it is much the same thing whether you take the vegetable in substance, or only its juice: for if a handful of scurvygrafs, eaten three times a-day, will cure the scurvy; so in like manner will its juice, if pressed out and drunk. The juice likewise of oranges or lemons, although collected together

ther in the cells of the fruit; yet, when pressed out and drunk, possesses just the same virtue, as if it had been more diffused among the leaves of the plant, and eaten in the form of a vegetable; as happens with the juice of the scurvygrafs. So that, in reality, the men being allowed a quantity of this juice regularly every day in their common drink, will receive as much advantage from it, as if they were to eat a quantity of scurvygrafs, or any other antiscorbutical plant, fresh out of a garden every day.

THAT this is a true and genuine fact, is evident from the comparison that hath been actually made, in this disease, between the effects of the juice of the antiscorbutick herbs, and the juice of oranges or lemons. For, KRAMER found from experience, in above a thousand cases, that this malady is
most

most effectually cured by the fresh juice of scurvygrafs and creffes, either mixed, or separately taken, to the quantity of three ounces twice or thrice a-day. And the same experience taught him, in those places where these herbs could not be obtained fresh, that the disease might be as effectually cured, by three or four ounces of the juice of oranges or citrons; taken twice a-day in a pint of water with sugar*.

BUT what seems to put the matter out of all doubt, is the actual cure, nay, and even prevention, of the scurvy at sea, where no vegetable food whatever could be had; by the simple juice alone of oranges or lemons.

JOHN WOODALL, a naval surgeon in the reign of King CHARLES I. observes that it

* Kramerii disput. epist. de scorbut. Norimberg, 1737.

was usual, in his time, for a good quantity of the juice of lemons to be sent out in each ship from England, by the great care of the merchants; which was intended only for the use of the sick, being an admirable comfort to the poor men, when afflicted by the scurvy. “The juice of lemons,” adds he, “is a precious medicine, and well tried, being found and good; let it have the chief place, for it will deserve it. It is to be taken each morning, to the quantity of two or three spoonfuls, and fast after it two hours; and if you add one spoonful of Aqua vitæ thereto, to a cold stomach, it is the better. Also, if you take a little thereof at night, it is good to mix therewith some sugar; or to take of the syrup thereof is not amiss. Some Chirurgeons also give of this juice daily to the men in health, as a preservative,

which course is good, if they have store; otherwise it were best to keep it for need*.”

Dr. LIND, when surgeon on board his Majesty's ship the Salisbury, in the year 1747, took two patients at sea labouring under the scurvy; having putrid gums, the spots and lassitude, with weakness of their knees. To each of these he gave two oranges and one lemon every day. They continued but six days under this course, having consumed the quantity that could be spared them. The consequence was, that one of them at the end of six days, was fit for duty; and the other was so far recovered, as to be appointed nurse to the rest of the sick. And by accounts, sent, from different hands, to the same gentleman; we find seve-

* The Surgeon's Mate, or military and domestique Surgery; London, 1639.

ral other instances of the like good effects of those fruits in this disease, while under a sea-diet.

“Mr. FRANCIS RUSSEL, in a cruise performed by the Princess Caroline, off the islands of Sardinia and Corfica; found some of these fruits got at Vado, to preserve great part of the crew, which otherwise must undoubtedly have perished. Mr. MURRAY also, who had the greatest opportunities of being acquainted with this disease, expresses himself thus in his letter: “As to oranges and lemons, I have always found them, when properly and sufficiently used, an infallible cure in every stage and species of the disease, if there was any degree of natural strength left; and where a diarrhoea, lientery, or dysentery, were not joined to the other scorbutick symptoms. Of which we had a most convincing

convincing

convincing proof, when we arrived at the Danish island of St. Thomas; where fifty patients belonging to the Canterbury, and seventy to the Norwich, in all the different stages of this distemper, were cured, in a little more than twelve days, by limes alone; where little or no other refreshments could be obtained.” And lastly, a surgeon of great merit and experience in the Guernsey, when extremely distressed by the scurvy, had great reason to believe, that several lives were absolutely preserved, when they were at sea, by a lemon squeezed into six or eight ounces of Malaga wine mixed with water, and given twice a-day*.”

THE learned Dr. MEAD, in a discourse he had with that experienced and brave admiral, Sir CHARLES WAGER, concerning the

* Treatise on the scurvy, p. 149, 154, 155.

health of our seamen; was told by him, that one year, when he commanded our fleet in the Baltic, his sailors were terribly afflicted with the scurvy. That he was then come last from the Mediterranean, and had, at Leghorn, taken in a great quantity of lemons and oranges. And recollecting, from what he had often heard, how effectual these fruits were in the cure of this distemper, he ordered a chest of each to be brought upon deck, and opened every day. The men, besides eating what they would, mixed the juice in their beer. The happy effect was, that he brought his sailors home in good health*.

IN the year 1760, his Majesty's ship the Torbay, kept constantly cruising at sea from

* Discourse on the scurvy, p. 111.

preventing the SCURVY. 19

the latter-end of July till the beginning of November; during all which time she kept surprisingly healthy; till towards the latter-end of her cruife, when the men began to be afflicted with the scurvy; which disease increased every day. But the ship accidentally falling in with a Spaniard at sea, their humane commander, Captain WILLIAM BRETT, purchased therefrom a quantity of lemons, for the use of the sick. These he distributed to them twice a-day; which produced so remarkable a change, that, above a dozen with black, swelled, and contracted legs, putrid gums, and difficulty of breathing; were, in less than two weeks, so far recovered, as to have no appearance of the scurvy left, except weakness; and they arrived in Plymouth Sound, without the loss of a single man out of six hundred and odd*.

* Gent. Mag. Decemb. 1760.

THESE examples, I think, prove beyond all doubt, the certain power of the juice of oranges and lemons in curing the scurvy at sea; without any other assistance whatsoever. And they likewise plainly point out the true manner, in which it should be used for preventing that disease; namely, by mixing it, as above directed, with the seamen's allowance of drink, regularly every day. And that this method of giving the juice, will, in like manner, actually prevent the scurvy at sea, I hope will evidently appear hereafter.

I MYSELF never gave the juice, of oranges or lemons alone, so fair a trial, in the cure of the scurvy at sea, as I now wish I had done; having generally mixed it, for that purpose, with the Peruvian bark, either in substance, or tincture. But, from the experiments I have made with it that way, com-
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pared with some others *, and the examples cited above, I am fully persuaded that it will of itself quickly cure the scurvy at sea, in all climates, and in all its stages; if only given to the quantity of one ounce and an half, three times a-day: and vegetables taken out of a garden could do no more, if they were given daily for the cure. If then one ounce and an half of the juice, taken three times a-day, will cure the disease at sea when perfectly formed; I presume it may reasonably be imagined, that a third part of that quantity, given daily by way of diet, will be fully sufficient to prevent it from taking place at all.

I WOULD humbly propose then, that one ounce and an half of the juice of oranges, or lemons, and two ounces of sugar, be dai-

* Vid. Libellum de Scorbuto, p. 77, 78.

ly allowed to each man in his Majesty's Navy; to be mixed with his allowance of spirit and water, commonly called *Grog*. And I would further advise, that the said liquor be so far diluted with water, as that the whole allowance to each man may be equal to three pints; and served out to him, regularly, three times a-day. That is to say, one pint at eight in the morning, another at twelve o'clock, and the third at four or six in the afternoon; so that it may become, as it were, the common drink of sailors at sea, like small beer; and that they may be rarely, or never, necessitated to drink water alone: This in cold climates, or in temperate ones in the winter time.

BUT in all hot climates, and in the heat of summer in temperate ones, a greater quantity

tity of drink is required; and then the liquor should be so far diluted with water, as that each man may have four pints a-day; namely, one at eight in the morning, two at twelve o'clock, and one at four, or six in the afternoon.

IN those countries where wine is allowed the ship's company, instead of spirits, I would advise the same quantity of the juice and sugar to be mixed therewith, as is directed for the *Grog*; and to be so far diluted with water, as that it may be served out in the same proportion, and in the same manner. And though good sound small beer, as observed before, is an excellent antiscorbutick liquor, yet, as it is not found sufficient of itself to prevent the disease, it should also be daily impregnated with the same

quantity of the juice and fugar. But as every man on board hath as much small beer as he chuses to drink, a quantity of this liquor, should be taken up daily, equal to the allowance of *Grog*, in order to be mixed with the juice and fugar; and served out regularly in the same manner.

By these means, there will be such a quantity of vegetable antiscorbutick juices thrown gradually into the body every day, by way of diet; as, in all human probability, will entirely counteract the bad effects arising from the putrescent and noxious qualities of the remainder of the sea-food; and thus hinder the body from running into that state of corruption, which is the genuine and true source of the scurvy.

THE great effects that a change of diet hath upon the bodies of men, with respect

to the scurvy, may be learned from the state of Great Britain, in general, some years ago; which was then very much subject to that disorder, from the nature of the food; which consisted much of salt beef, pork, fish, and things approaching to a sea diet*. Whereas now, by feeding more on vegetable substances, and drinking good generous liquors, the disease is more rarely heard of; except in some particular places, or families, where that sort of diet is still in use. The same may be observed of Holland, Denmark, Sweden, Norway, Canada, Hudson's-bay, Newfoundland, and such like places, where the scurvy used to be a most dreadful disease; but, by merely changing the diet, they can entirely prevent it. Of such consequence, are little circumstances in

* Diseases of the army, by Sir John Pringle, Baronet, edit. 6th p. 334.

preventing diseases, which are but too often overlooked! And, to bring this matter nearer to the point in hand, I will at once prove, by the following remarkable examples, that a change of diet will as effectually prevent the scurvy at sea, as at land.

“ IN the grand fleet of England, commanded by Sir EDWARD HAWKE, who, on the 20th of November, 1759, defeated the French under Monsieur CONFLANS, the men enjoyed a most perfect and unparalleled state of health. This fleet is supposed, at most times, to have consisted of above twenty ships of the line, and ten or more frigates, in which were embarked about fourteen thousand people. On the day of action, many of those ships and men had been above six months from Spithead; notwithstanding, as I have been told,” says the author,

thor, "there were not then among them twenty sick in all. Out of 880 men in the Royal George, (Sir EDWARD HAWKE's ship) there was but one man who was incapable of duty. In the Union (Sir CHARLES HARDY's ship) of 770, they had likewise but one unfit for service; and on board the Mars, commanded by Commodore YOUNG, though a new ship of 64 guns, there was not a sick person. Now it was hardly ever known before, that ships could cruise in the Bay of Biscay, much above three or four months at a time, without having their men afflicted with the scurvy. An exemption from that calamity was entirely owing to this fleet having been well supplied with fresh meat and greens *."

Now, the juice of oranges or lemons, if given regularly every day, does much the

* Lind on fevers and infection, p. 31.

same thing; as appears from the history of the first voyage made to the East-Indies, on account of the English East-India company, under the command of JAMES LANCASTER. This, as far as relates to the present subject, I will deliver in the very words of the author, who wrote in the year 1625; that the curious reader may view the whole, in its own simple, native dress.

“THE Merchants of London, in the yeare of our Lord 1600, joyned together, and made a stocke of seuentie two thousand pounds, to be imployed in ships and merchandizes, for the discouery of a trade in the East-India; to bring into this Realme, spices and other commodities. They bought foure great ships to bee imployed in this voyage: these they furnished with men, victuals and munition for twentie monethes, and

and sent in them, in Merchandise and Spanish money, to the value of seven and twentie thousand pounds.

“ THESE ships were readie and departed from Wolwich in the Riuer of Thames, the thirteenth of February after the English accompt, 1600; with foure hundred and fourescore men in them. In the Dragon, two hundred and two men: Master James Lancafter, the Generall. In the Hector, an hundred and eight: John Middleton, Capitaine. In the Ascention, fourescore and two: Master William Brand, chiefe Gouvernour. And in the Susan, fourescore and eight: Master John Heyward: and more, in euery of the said ships, three merchants to succeed one the other, if any of them should be taken away by death. The Guest, a ship of
an

an hundred and thirtie tunnes, was added as a Victualler.

“ FROM the twentieth of May, till the one and twentieth of June, wee lay the most part becalmed, and with contrarie winds at South; and turning vp and downe with this contrary wind, with much adoe we got into two degrees of the North side of the Line: where we espyed a ship, to the which the Generall gave chase, commanding all the rest of the ships to follow him; and by two of the clocke in the afternoone, we had fet her vp and tooke her. She was of the Citie of Viana in Portugall, and came from Lisbon in the companie of two Carrackes, and three Gallions bound for the East-India, which ships she had lost at sea. We tooke out of her an hundred fixe and fortie Buts of Wine, an hundred threescore and sixteene Jarres

Jarres of Oyle, twelue Barrels of Oyle, and five and fiftie Hogsheads and Fats of Meale, which was a great helpe to vs in the whole Voyage after. The Generall diuided these Victuals indifferently to all the ships, to euery one his proportion without partialitie.

“THE twentieth of July, we were shot into nineteen degrees fortie minutes to the Southward of the Line, the wind inlargeing daily to the East-ward. Here we discharged the Guest, the ship that went along with vs to carry the Prouisions, that our foure ships could not take in, in England. After we had discharged her, we tooke her Mafts, Sayles and Yards, and brake downe her higher buildings for fire-wood, and so left her floating in the sea: and followed our course to the South-ward.

Thus

“THUS following on our course, the first of August we came into the height of thirtie degrees South of the Line: at which time we met the South-west wind, to the great comfort of all our people. For, by this time, very many of our men were fallen sicke of the Scurvey in all our ships, and unlesse it were in the Generals ship only, the other three were so weake of men, that they could hardly handle the sayles. This wind held faire, till wee came within two hundred and fiftie leagues of the Cape Buena Esperanza, and then came cleane contrarie against vs to the East: and so held some fiftene or sixteene dayes to the great discomfort of our men. For now the few whole men we had, beganne also to fall sicke, so that our weaknesse of men was so great, that in some of the ships, the Merchants took their turnes at the Helme: and went
into

into the top to take in the top-fayles, as the common Mariners did.

“ BUT God (who sheweth mercy in all distreffes) sent vs a faire wind againe, so that the ninth of September wee came to Soldania *, where the Generall, before the rest, bare in, and came to an anchor, and hoyfed out his Boats to helpe the rest of the ships. For now the state of the other three was such, that they were hardly able to let fall an anchor to saue themselves withall. The Generall went aboard of them, and carryed good store of men, and hoyfed out their Boats for them which they were not able to doe of themselves. And the reason why the Generals men stood better in health then

* A bay near the Cape of Good Hope.

the men of other ships was this: he brought to sea with him certaine Bottles of the Juice of Limons, which hee gave to each one, as long as it would last, three spoonfuls euery morning fasting: by this meanes the Generall cured many of his men, and preferued the rest, which was the mercie of God to vs all.

“AFTER the Generall had holpen the rest of the ships to hoyse out their boats, they began all to be greatly comforted. Then, he himself went presently a-land to seeke some refreshing for our sicke and weake men, where hee met with certaine of the countrey people, and gaue them diuers trifles, as Kniues, and peeces of old Iron, and such like, and made signes to them to bring him downe Sheepe and Oxen. For he spake to them in the Cattels Language, which was neuer changed at the confusion of Babell,
which

preventing the SCURVY. 35

which was *Moath* for Oxen, and Kine, and *Baa* for Sheepe: which Language the people understood very well without any Interpreter.

“THE third day after our comming into this Bay of Soldania, the people brought downe Beefes and Muttons, which we bought of them for peeces of old Iron-hoopes; as two peeces of eight inches a peece, for an Oxe, and one peece of eight inches for a Sheepe; with which they seemed to be well contented. While wee stayed heere in this Bay, wee had so royall refreshing, that all our men recouered their health and strength, onely foure or five excepted. But, before our comming in, and in this place, wee lost out of all our ships one hundred and five men *.”

* Purchas his Pilgrimes, vol. i. p. 147.

HERE we have a full proof of the actual prevention, and even cure of the scurvy at sea ; by the sole use of the juice of lemons, given regularly every day, to the quantity of about one ounce and an half. For it appears, by the above account, that, as soon as the scurvy began to make its appearance in the general's ship, he brought out his bottles of lemon-juice ; and by giving three spoonfuls of it regularly every day, by way of breakfast, that he not only cured those of his men, who had already contracted the disease ; but, likewise, entirely prevented the rest of his crew, from having it at all. Whereas, the other three ships of this squadron, for want of this change alone in their diet ; had the misfortune to see, nearly one half of their men, perish by that dreadful malady.

LET us add one example more, in order to see what the four ingredients, sugar, juice, spirit, and water, when all combined, are capable of effecting; if given, purely, by way of prevention. SOLOMON DE MONCHY, a celebrated Dutch physician, in his essay on the causes and cure of the usual diseases, in voyages to the West-Indies* ; furnisheth us, even from our own country, with an instance of this kind. “ It is related,” says he, “ in England, and known to be true, that a gentleman of that country, returning from the East-Indies, laid in a large stock of arrack, sugar, and oranges; and that, every Saturday evening, he regaled the ship’s company with a large tub full of strong punch; to drink to their wives and sweethearts, according to the English custom: And, though the passage

* English translation, p. 165.

to the Cape of Good Hope was long and tedious, yet not one man was down with the scurvy; whilst in other ships, of the same fleet, that distemper raged most deplorably.”

THESE facts, if I am not mistaken, also clearly prove what I have advanced above*; namely, that the principal cause of the scurvy, is not in the weakened spring, or foulness of a ship's atmosphere, nor in the moisture of the air; but in the food of our seamen. And hence it follows, that, if ever the disease be prevented at sea, it must be by a change made in the sea-diet; and no way else.

I THE rather dwell upon this, because ingenious men, fixing their chief attention

* See page 8.

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upon the less efficient cause of this disease, have both misled themselves and others, by turning the current of the mind into a wrong channel; and thus have retarded a true and proper method, for the prevention of a distemper so fatal to our seamen, from being rightly followed.

ANSON'S voyage, I apprehend, was the chief thing, that contributed to mislead these gentlemen. For the elegant writer of that story, is greatly surpris'd to find, that the scurvy should return upon them in less than seven weeks, after their leaving the coast of Mexico; when, at the same time, they had plenty of fresh provisions on board, which are reckoned effectual preventives of this malady*. But what were these fresh provisions? were they not hog's flesh and

* Anson's voyage, p. 396.

fish, which the whole crew often fed upon? but so putrescent a diet, as hog's flesh and fish, is no way calculated either to cure, or to prevent so putrid a disease, as that of the scurvy. However, as these fresh provisions *, did neither cure, nor prevent the disease; some of the British writers, on the scurvy, who came after him, paid much less attention, to the noxious qualities of the sea-diet, than seems requisite; placing the principal cause of the malady, in some evil disposition of the air; our author leading the way, by the following ingenious conjecture.

“PERHAPS,” says he, “a distinct and adequate knowledge of the source of this

* Dr. Mead lays great stress upon these flesh-provisions, as things very powerful in preventing the scurvy. Discourse on the Scurvy, p. 100. Dr. Lind, on the scurvy, does the same, p. 52, 65.

disease may never be discovered ; but in general, there is no difficulty in conceiving, that as a continued supply of fresh air is necessary to all animal life, and as this air is so particular a fluid, that without losing its elasticity, or any of its obvious properties, it may be rendered unfit for this purpose, by the mixing with it some very subtile and otherwise imperceptible effluvia ; it may be easily conceived, I say, that the steams arising from the ocean may have a tendency to render the air they are spread through less properly adapted to the support of the life of terrestrial animals, unless these steams are corrected by effluvia of another kind, which perhaps the land alone can afford *.”

DR. MEAD caught the hint, and immediately concluded that a foul air deprived

* P. 397.

of its proper gravity, was the principal agent of the scurvy*; and was perfectly satisfied within himself, that, if any method could be invented to extract the foul air out of ships, it would be one of the greatest means of preventing that disease. And this gave rise to his discourse on the scurvy; the design of which, was to demonstrate the usefulness of SUTTON's machine, for the prevention of that malady, in the royal navy.

BUT this ingenious physician carried the aerial idea still further; so as even to ascribe the speedy recovery of commodore ANSON's men, at the island of Tinian, to the healing qualities of the land-air; as we may learn from the following words: "It is almost incredible how soon the sick, even though just dying, begin, when brought ashore, to

* Discourse on the scurvy, p. 100.

feel the falutary effects of the land: for whereas the commodore had buried twenty-one men in two days, before his arrival at the island of Tinian, yet he did not lose above ten, during his two months stay there. For so healing and contrary to the malignity and bad quality of the sea-air, was that of the land, that the patients, even upon their being exposed upon the ground, immediately recovered *.”

Now the speedy recovery of these men, was not owing to the falutary effects of the land-air, as the learned MEAD supposed, but to the fruits of the island; as hath been observed before †. For when the commodore landed his scorbutick people on the beautiful island of Juan Fernandes, where they breath-

* Discourse on the scurvy, p. 118.

† Page 6.

ed the purest air; yet, they continued dying (the reason of which will appear hereafter), for twenty days together: But such is human weakness, that the most comprehensive mind, is ever open to deception, when judging of the nature and cause of things.

AND although this opinion of the good effects of the land-air, in quickly restoring scorbuticks, may appear, at first sight, harmless in itself; yet, being adopted, it may prove of the most fatal consequence, not only to a single ship, but a whole squadron, or fleet; when obliged to touch at any place, for the recovery of its men from the scurvy. For, so far from hurrying the sick ashore (as that opinion dictates, and which is the common practice), in order to breathe in, those imaginary healing qualities of the land-air; all commanders of ships ought to
lay

lay it down as an invariable maxim, never to land any of their men, in this disease (if they can possibly avoid it), who are so weak, as to be confined to their beds. These, by all means, should be kept on board, until they have gathered so much strength, by the use of vegetable refreshments brought them from ashore, as to be able to walk about, and assist themselves. Otherwise, they will run the hazard of destroying them on the spot, either by the very motion, or by exposing their weak bodies to the unaccustomed fresh air; or by both *. And if they should be so fortunate, as to escape the present evil; yet, after all, they will not recover so fast on shore, as if they had first been kept on board, for some time, until they had recruited somewhat in their strength;

* See Anson's Voyage, p. 142, 154. and Libel. de Scorbut. p. 27.

and

and been gradually inured to breathe a new, though purer air.

It was this mistaken notion of the great effects of the land-air, in recovering scorbuticks *, which occasioned commodore ANSON to lose so many of his men, purely by landing them too soon, after his arrival at the island of Juan Fernandes. For, by this mean, twelve or fourteen of them died in the boats, on their being exposed to the fresh air; and for the first ten or twelve days, he buried rarely less than six each day; and many of those, who survived, recovered by very slow and insensible degrees; so that it was near twenty days, after their landing, before the mortality was tolerably ceased. Whereas, those who were well enough at their first getting on shore,

* Anson's Voyage, p. 155, 397.

to creep out of their tents, and crawl about, were soon relieved, and recovered their health and strength in a very short time †. And the Gloucester, which arrived at the same island, some time after the commodore's ship the Centurion, is likewise another proof of what I have advanced. For though that ship was bandied about, by contrary winds, for a whole month together, within a few leagues of her intended harbour; yet, by being supplied with greens and fresh provisions, from time to time, by the Centurion's people; it happened, quite contrary to the expectations of all, that their sick, when landed, were in general relieved, and restored to their strength, in a much shorter time than the commodore's sick had been, when they first came to the island;

† Anson's Voyage, p. 155.

and very few of them died on shore *. So that, what at that time seemed to them as the greatest misfortune, was perhaps designed as the greatest blessing.

DR. LIND, on the other hand, supposes the moisture of the air alone, whether hot or cold, to be the most powerful and principal cause of the scurvy, (the merits of which opinion I have considered elsewhere) †; and looks upon the sea-diet as only a slighter occasional cause, which, will not, of itself, tend much to produce the disease; without the assistance of a moist atmosphere ‡. And in this, indeed, he seems to be implicitly followed, even to this day; for thus writeth Dr. MACBRIDE. “Whoever has read,” says he “Dr. LIND’S

* Pag. 178.

† Vid. Libel. de Scorbut. cap. v.

‡ Treatise on the Scurvy, p. 76.

excellent treatise on the scurvy, must be convinced that the principal and main predisposing cause is too great a degree of moisture in the atmosphere, whether hot or cold, but more especially the latter; and that the use of salt diet, bad water, or foul air, can only be reckoned as secondary causes, which will not of themselves produce the disease*.”

BUT, for my own part, I am fully persuaded, that it is the sea-diet, and not the air, which is the most powerful, and principal cause of the scurvy; for by a change of diet alone, the scurvy may be prevented at sea, whether the air be hot, or cold, dry, or moist; as plainly appeareth from the above examples, of HAWKE'S fleet, and LANCASTER'S squadron. For it can hardly be imagined, that Sir EDWARD HAWKE'S fleet

* Exper. essays, Edit. 2. p. 174.

could remain cruising in the Bay of Biscay, for six or seven months together; or, that JAMES LANCASTER could continue his voyage to the Cape of Good Hope, from the time that the scurvy first appeared on board; without suffering all the noxious influence that can well be ascribed to the foulness of a ship's atmosphere, or a moist sea-air. And yet we find, in the one case, merely by a change made in the sea-diet, a whole ship's crew, part of them cured, and part of them preserved from the scurvy; whilst the crews of their comforts, for want of this change, perished by the disease. And in the other case, we, with grateful pleasure, see fourteen thousand persons return victorious home, though pent up in ships for six or seven months together; and observe them, likewise, "enjoy a better state of health upon the watery element, than it can well be ima-

preventing the SCURVY. 51

gined so great a number of people would enjoy, though quartered on the most healthful spot of ground perhaps in the world*.”

HAVING thus pointed out a method of preventing a disease, so fatal to the British navy, as that of the scurvy; I foresee three objections, that may be made to its execution. First, the additional expence that it would make to the navy list: Next, the difficulty of procuring so large a quantity of the juice of oranges or lemons, as to serve the Royal Fleet: And lastly, the manner of preserving the juice good.

As to the additional expence, a pound of coarse brown sugar, at a medium, may be reckoned at threepence; which, at two ounces a-day, for each man, will be only

* Lind on fevers and infection, p. 32.

equal to one farthing and an half. The
juice of oranges may be bought, ready pre-
pared, here in London, from four to five
shillings, a gallon. But, by having it
brought, in casks, from the places where the
fruit grows, the expence, by a very mode-
rate computation, as I am informed, may be
reduced to two shillings and sixpence, a gal-
lon. And this will not seem at all impro-
bable, if we attend to the savings that will
be made thereby, in the freight; and some
other contingent expences. For, as oranges
come packed up in chests, they necessarily
take up a great deal of room in a ship; there
must likewise be frequently a great loss on
the fruit, which is always damaged, more or
less, in bringing over; to say nothing of the
charge the merchant is at, in having the
fruit picked, and the like. The whole ad-
ditional expence, then, of the sugar and
juice

juice taken together, will be less than three farthings a-day, for each man. And I presume, that even this might be still diminished, by contracting for so large a quantity, of those two articles, at a time, as would be necessary for the use of the navy.

I AM, indeed, very sensible, that although this additional expence of less than three farthings a-day, for each man, may appear but small; yet, when calculated for the whole British navy, in time of war, it will be very considerable. However, to form a right estimate, in the present case, of the intrinsic value of the expence; the reader should be pleased to set against it the following deductions, and considerations: 1st, The savings that would be made, to the hospital expences, by having the men preserved from the scurvy. 2d, The expence of the

Elixir of Vitriol and Vinegar, which might be very well spared, if the native vegetable acid should be introduced, by way of diet, as is here proposed. 3d, The perpetual loss arising to the Government, during a war, in raising men to supply the place of those, who die of that fatal malady. 4th, The time the fleet may lie in harbour, or be supplied with vegetable refreshments from ashore: suppose two or three months in the year. 5th, The many inconveniencies which arise to the fleet, in time of war, from being unhealthy, when at sea; or having many of their men left sick on shore: And, on the contrary, the great advantages which will accrue to the fleet, by being thus kept active, and in full health; by a regular supply of this wholesome drink. If these considerations, I say, be duly attended to, I humbly imagine, that they will be thought
fully

fully sufficient, to over-balance any objection against the expence. Moreover, the very same liquor, here proposed, will be one of the best means to prevent all other diseases, in the British navy, arising from putrefaction; and of which alone (including the scurvy) there died, according to accounts published in December, 1762, above eighty-six thousand six hundred men, out of one hundred and eighty-five thousand, raised for the sea-service, during the late war*.

WITH respect to the procuring a sufficient quantity of the juice, there would be no great difficulty; for the British Consuls, in Portugal, Spain, Italy, on the coast of Barbary, at the Canary, or Madeira Islands, could always purchase what quantity, either of the fruit or juice, they might want;

* Macbride's Exper. Essays, p. 173.

and that at an easy rate, by only observing the proper time of the year. Nay, what is preferable, I doubt not but that our own Colonies, would be able to furnish us, on very easy terms, with whatever quantity either of the juice of oranges, limes, or lemons, (all equally efficacious) we should have occasion for.

As to the preservation of the juice, the orange-merchants, in London, preserve their orange-juice very successfully, for several years together, by the following easy method: They take the Seville or sour oranges, that are quite ripe, and no ways damaged; these they squeeze, very dexterously, over the head of a large cask, which is hollowed out for that purpose; and pierced full of small holes, that the juice may run through, and the seeds remain behind.

When

When the vessel is near full, they take up the juice, and pass it through a hair sieve; and put it into a large cask well seasoned with rum, or brandy. A common rum-puncheon, is reckoned as good as any thing, for this purpose; and, if it be set on one end, instead of its side, that will be the best position for drawing off the clear juice, from the sediment. There must be a vent-hole made, at the top of the puncheon, stopped with a spill; which is to be managed, just in the same manner, as is done for beer, when in casks.

THE latter-end of January, or beginning of February, is the best time of the year for squeezing the juice. In the space of about three or four weeks, it purifies itself; by throwing down, to the bottom, a thick sediment, and raising up to the top, an uniform
tough

tough scum; two or three inches thick. They draw off the clear juice, in the middle of these, by means of a cock; and thus serve it out to their daily customers; and send it away, in small casks, to all parts of the kingdom.

How long the simple juice of oranges, prepared in this way, will keep at sea, in casks, I cannot say; but in all probability, it will keep as well as most kinds of wine: When used, it must be given to its full quantity, of one ounce and an half a-day; as mentioned before.

THE juice of lemons, when managed in this way, though it remains quite clear and good, yet does not preserve its flavour so well as the orange-juice; for which reason, the latter is now, in point of keeping, universally

versally preferred to the former; not only by the orange-merchants themselves, but by all the dealers, in those articles, in general. It is also necessary to observe, that the juice of oranges and lemons should never be mixed and prepared together in the same vessel; but always be kept separately.

IF having the juice reduced into a very small compass, should be thought more convenient, either for its stowage or preservation; that may be easily effected, as the ingenious Dr. LIND proposeth, by evaporating the watery part: whereby the acid and virtues of twelve dozen of lemons or oranges, may be put into the small compass of a quart bottle, if so required, and preserved good for many years. The method is as follows:

“ Let

“LET the squeezed juice of these fruits be well cleared from the pulp, and depurated by standing for some time; then poured off from the gross sediment: or, to have it still purer, it may be filtrated. Let it then be put into any clean open vessel of china, which should be wider at the top than bottom, so that there may be the largest surface above, to favour the evaporation. For this purpose a china basin or punch-bowl is proper; as generally made in the form required. Into this pour the purified juice; and put it into a pan of water, upon a clear fire. Let the water come almost to boil, and continue nearly in that state of boiling (with the basin containing the juice in the middle of it) until the juice is found to be of the consistence of a thick syrup when cold.

“ I have,

“ I have,” adds he, “ some of the extract of lemons now by me, which was made four years ago. And when this is mixed with water, or made into punch, few are able to distinguish it from the fresh squeezed juice mixed up in like manner; except when both are present, and their different tastes compared at the same time; when the fresh fruits discover a greater degree of smartness and fragrancy. However, if it be judged of any consequence to preserve the perfect fragrancy of the fruit, I find it is sufficient to add a very small quantity of the outer peel to the extract a little before it is taken off the fire, and there will be all that is requisite to make it entirely equal to the freshest fruit; insomuch, that the nicest taste will not be able to distinguish any difference. Its virtues (as must appear to any
one

one so far conversant in chemical principles, as to know there is nothing more lost here than water, with a scarce perceptible acid) will be found nothing inferior to the fresh fruit. *”

DR. LIND invented this manner of preparing the juice (which, when made, he calls rob, or extract) principally for the use of the common sailors, when they came into any port where there was plenty of those fruits; that they might always have it lying by them, in a convenient, small bulk, and thereby purify their constitutions from the scorbutick taint. “Now, though it is well known,” says he, “that some of the sailors are very thoughtless, and take but little concern about their health, yet doubtless there are many among them who

* Treatise on the scurvy, p. 162, to 167.

reflect,

reflect, and will take the proper pains, when instructed. For the sake of these the *rob* is recommended, as also to the surgeons of ships (when in a place where plenty of these fruits can be procured, and their virtues can be reduced into so small a compass) leaving it to the officers to provide themselves with the fresh fruits or their juices." And then judiciously remarks, "that it is indeed a pity the men of war, and the ships in the East-India company's service, are not supplied with either the juice of oranges, or the extract of lemons *."

THE case, then, being thus, any one would at once be led to imagine, that no man sure in his senses, would be so far careless of his own health and happiness, as to neglect such easy means as these, whereby he might

* P. 165.

preferve both. But, notwithstanding this, though, during the late war, I have been in many parts of the world, where there was the greatest plenty of oranges and lemons, and the failors full of money; yet, I do not remember one instance, where a failor ever furnished himself with a drop of this *rob*; or even had the precaution of carrying along with him, for his preservation, so much as the simple expressed juice. There is no other way, therefore, of having those brave, though careles men, supplied with these juices, so as to preserve them from the scurvy, but by the kind interposition of Government; and this will be done, the most effectually, in the way herein proposed; by having them served out, to the ship's crew, regularly every day, by way of diet. But to return to the manner of preserving the juice,

ALTHOUGH

ALTHOUGH a punch bowl, fet in hot water, as Dr. LIND propofes, might do very well to prepare as much juice at a time, as would ferve a failor, for his own private ufe; yet, it will no way anfwer, the present intended purpofe. For, to prepare as much, as would ferve the whole navy; and perform it with all convenient expedition; it muft be done, in large open glafs veffels, in a fand heat; whereby a quick evaporation is made, and a large quantity foon prepared; with little trouble, and at a very fmall expence.

I AM told that fome families, in the West-Indies, are at no other trouble in preferving their juice of oranges, limes, or lemons, than by expofing it to the heat of the fun; which foon exhales the watery part, and then the remainder is bottled up for ufe,

either at their own houses, or on board of ships; and frequently sent over here to their friends in England. So that our colonies, in the West-Indies, have the greatest opportunity of preparing the juice; and might, in a short time, be able to furnish us with any quantity of it, we might want.

WHEN the juice, thus prepared, is served out to the ship's company, a proper allowance must always be made according to its strength; which will be in proportion to the degree of evaporation. But I imagine, that the evaporation of two thirds will be fully sufficient, both to preserve the remainder, and to reduce it into a conveniently small bulk: And then the allowance to each man a-day, will be just half an ounce; which will be equal to one ounce and an half, of the simple expressed juice.

WHETHER

WHETHER the simple expreffed juice, or that which is prepared by evaporation, be made ufe of; before it be fent on board, it fhould be put into good ftrong casks, well feafoned, for the purpofe, with fome brandy, or rum; and of fuch a fize, as will be found beft fitted for the fhip's ftowage, and for ufe. And that the cask, which is in ufe, might be always more ready at hand; it may be kept flung under the half-deck, or in any other commodious part of the fhip. And the meafures, cocks, and pumps, which would be neceffary, when the juice came to be ferved out to the fhip's company; fhould all be of wood.

I HAVE joined the virtues, of the juice of oranges and lemons, together, (to which add the juice of limes *) through the whole

* Vid. p. 17.

of this propofal; becaufe, I have found them, by experience †, to be equally efficacious: fo that it is immaterial, whether the one, or the other, or both be made ufe of; for the prevention of the fcurvy, at fea.

HAVING, thus, duly confidered the whole matter; I hope, it will plainly appear, to every candid reader, that the above propofal, is not the refult of mere imagination, but founded on folid reasoning; by carefully confidering the nature, and caufes of the difeafe, it is intended to prevent. For, having had frequent opportunities, during the late war, of feeing the rife and progrefs of this fatal malady; I plainly perceived, if I miftake not, that its chief caufe lay in the noxious quality of the fea-

* Vid. Libel. de Scott. t. p. 76.

diet;

preventing the SCURVY. 69

diet; and that, if this could be corrected, by taking daily, by way of food, a quantity of such vegetable juices, as were known to cure the disease, when perfectly formed; that the other causes, might be considered as trivial, and the scurvy, in all human probability, would rarely, or never appear. And, this gave rise to the present proposal, for preventing the scurvy, in the British navy; which, I humbly submit, to the consideration of the publick, and particularly to the attention of those, who are more immediately intrusted, with the conduct of our naval affairs.

I CANNOT dismiss this subject, without first recommending, another improvement, in our sea-diet. Portable broth, for some years past, hath been regularly allowed, for the use of the sick and hurt, in his Majesty's

navy. It is prepared under the inspection of the sick and hurt office; and as it is made from such parts of the meat, as will not serve for salting, the expence is inconsiderable. Yet, it is so good in its kind, that, when made into soup with pease, it can hardly be distinguished from that, which has been made with the best part of the beef. Infomuch, that I have been told, that Lord ANSON, at the time of its being first proposed to the navy, used frequently to have one dish of pease soup, made with this; and another with fresh beef out of the market; and had them served up at his table together; when his guests, who eat of both, and were ignorant of their different compositions, being asked their opinions; frequently gave it in favour of the soup, made with portable broth. Pease soup, made with this at sea, will be greatly improved,

by

by the addition of a few feeds of celery boiled in it ; or a little dried mint, thyme, garlick, or the like.

I WOULD gladly advise, then, that this diet should become quite general ; and, that the whole ship's company, should be regularly supplied with a mess of this broth, boiled up in their pease, every time that they are allowed them : That thus no means may be neglected, to preserve the men, in the British navy, in full strength and vigour ; so that they may be ever able, as they are willing, to combat the greatest dangers.

I WILL beg leave to conclude by observing, that the same method, which I have proposed, for preventing the scurvy at sea, will be equally applicable, to all garrisons and places whatever, that are in danger of

being besieged. These should be as regularly supplied with that kind of antiscorbutick diet, for the preservation of their health and strength, as with powder and ball to defend themselves with: For what are powder and ball, without men capable of using them?

HAD the states of Holland provided the city of Breda, before it was besieged, with plenty of that kind of diet; it is more than probable, that so many hundreds of their bravest men *, would not have died by piecemeal of the scurvy: but would have held out till the prince of ORANGE could have come up to their relief. Had the garrison of Thorn, before its siege, been supplied with that kind of food; it is more than probable, that six thousand of

* Vander Mye, de morb. Bredan.

its choicest men, besides a great number of inhabitants *, would not have been destroyed by this malady; whereas, for want of it, the surrender of the town was more owing to the havock made by this dreadful calamity, than to the bravery of the besiegers. Had the Imperial army, when it wintered in Hungary, after the war with the Turks †, been regularly supplied with that sort of diet; it is more than probable, that so many thousands of its men! would not have perished by the scurvy.

* Bachstrom, circa scorbut.

† Idem.



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A P P E N D I X.

NOTWITHSTANDING I have particularly adapted the above method of preventing the scurvy, to the use of the Royal fleet; yet it is equally applicable to all private ships, whether in the East or West India service, or any other trade whatever. For after these have been out at sea for some time, and fear an approaching scurvy; if a quantity of the juice of oranges, limes, or lemons and sugar, were to be mixed with water, without the addition of any wine or spirits, and served out regularly three times a-day, as recommended in the proposal; it would, in all probability, prevent

prevent the disease from appearing at all, and keep the crew healthy for the remainder of the voyage.

IT hath been already observed*, that it was a custom with the merchants of England, even above a century ago, to send out in every ship a good quantity of the juice of lemons for the use of the sick on board; and that it was always found an excellent remedy for those who were afflicted with the scurvy. That indeed might be more necessary in those days, when navigation was more in its infancy, as it were, than at present; and consequently the voyages to all the different parts of the world more long and hazardous. But the same reason still holds good, with respect to all ships that carry a great number of men, and are in danger of a tedious or sickly passage, in

* Page 14.

failing from one destined port to another; such, particularly, are ships trading to the East-Indies, and the coast of Guinea.

THE honourable the East-India company, therefore, would do well to order a quantity of the juice of oranges, to be always carried out in those ships which are employed in their service. And it might be no less useful to those who are in the Guinea-trade: for by supplying themselves with a sufficient stock of the juice, and serving it out regularly to the slaves every day, it might possibly tend more towards the preservation of their lives, than any other method they have yet fallen upon. And perhaps the vegetable acid is more particularly necessary to them, as they are so much accustomed to it in their native

5 country.

country. By these means, both fevers, fluxes, and scurvies, which carry off yearly so many of those poor creatures, might, perhaps, in a great measure, be prevented; and thereby an immense saving (to make use of no other argument) be made to the merchants, and trade in general.

THE juice of oranges may always be had at most of the orange-merchants in London; and if prepared in the manner already described, will preserve its virtues, in casks, exceedingly well. I say, in casks; because it hath been commonly imagined, that glass was the best to preserve the juice in; and therefore it hath been generally directed, that it should be put into small pint bottles, with a little oil poured upon it; and the more perfectly to prevent all access of air, that they should be well corked, and have
a covering

a covering of wax or rosin over all. But I am fully persuaded, that wood, of all other materials, is the best calculated for the preservation of the juice. And I find, upon inquiry of some of the dealers in this article, that they are entirely of the same opinion; and likewise imagine, that the larger the quantity of liquor, which is kept together in a cask, the better it will preserve.

HOWEVER, as this was not sufficiently attended to, and as the juice was observed to spoil, when kept in the common way in bottles; I suppose these two circumstances gave rise to the general opinion, that it could not possibly be long preserved, without being first put into bottles with some oil, and then closely sealed up in the manner above mentioned. Whereas we find, that, when kept in casks, it requires no

other precaution, for excluding the air, than what is made use of for wine, cider, or any other liquor of the like kind. And as a bottle of wine or cider would soon spoil if frequently opened, and only a few spoonfuls taken out at a time (as is commonly done with lemon or orange juice); so it is no wonder that the juice should do the like, when opened and used in the same manner.

ANOTHER very substantial reason might also be given, why the juice should be thought to spoil sooner than it naturally does; and that is the evil practice which some have been fraudulent enough to make use of, in squeezing bad juice, or adulterating it with foreign mixtures; and then selling it for what is good and genuine. This one artifice, I believe, hath brought more discredit upon the keeping of the
juices,

juices, than any other thing whatever. Whereas I am told, that if ever the juice, when prepared as above directed, should not be found to keep good in casks for a length of time; it ought by no means to be ascribed to any peculiar property appertaining to the juice in general, but merely to the squeezing of damaged fruit, or some other cause of the like nature. But it is to be hoped, both for the credit of this merchandise, and the trade in general, that all those who are in the business will come to a resolution, never to squeeze any orange or lemon juice, but what is good and genuine; that merchant-ships may always be supplied with a sufficient quantity thereof, on the least notice, and not be disappointed when they come to make use of it. Otherwise, the Merchants who should chuse to furnish

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their

their ships with a quantity of that antiscorbutick liquor, will be under a necessity of buying the fruit and squeezing it themselves.

WHEN ships are abroad, and touch at any place where oranges, limes, or lemons grow; their juice may be easily prepared, in a sufficient quantity, without any further trouble, than squeezing the fruit, and passing the juice through a piece of flannel, hair-cloth, or sieve, into a cask. For it is then fit for immediate use, if so required, and may be drawn off, as it is wanted, every day, till the whole is consumed; only observing not to take it out at the bung-hole, but draw it off at the end of the cask by means of a cock, which should always be of wood. The reason of this precaution is, that the fresh juice, after standing in the
cask

cask for some time, will always form a thick tough scum, which will swim on the top of the liquor, and which should be broken and disturbed as little as possible. For as you empty the cask, this will gradually sink down towards the bottom, and so form a coat constantly floating on the surface of the liquor, till the whole be expended. But if time and opportunity will admit of it, it would always be the best to let the juice stand at rest, for a few days, in order to settle and clarify itself; and then draw off the pure juice into a cask, well seasoned with a little rum, or brandy.

SINCE I drew up the above proposal, I have the pleasure to observe, that the opinion of the ingenious MACBRIDE, relating to the virtues of fresh Wort, in the cure of the scurvy, at sea; hath, in a great measure,

been verified, in ten cafes lately tranfmitted to him: four by Mr. ALEXANDER YOUNG, furgeon of his Majefty's fhip the Jafon; and fix by Mr. JAMES BADENACH, furgeon of the Nottingham Eaft-Indiaman. If repeated trials fhould ftill further confirm the efficacy of this liquor, it muft be efteemed a great difcovery; and might poffibly be ufed, very fuccefsfully, as a prefervative againft that difeafe; by allowing the men in the Royal navy, a flight infufion of malt regularly every day, for their common drink, inftead of water. The direCTIONS for brewing and adminiftring the wort, for the cure of the fcurvy at fea, are as follow.

“ THE malt is to be ground daily in a hand-mill, according as it is required. Take one meafure (fuppofe a quart) of the ground malt, and pour on it three meafures of boil-
ing

ing water; stir them well, and let the mixture stand, close covered up, for three or four hours; after which, strain off the liquor. It must be brewed, in hot weather especially, fresh every day; for if it be allowed to grow vapid, or sourish, it will not only be unpleasant, but useless, as it would not then run easily into fermentation. The wort is of a pale colour, sweetish and very agreeable: a glass full of it, in a heat of 74 degrees of Fahrenheit's thermometer, kept for 24 hours, perfectly sweet and fresh; but in 36 hours became vapid, sourish, and threw up a scum to the surface. When the malt was boiled, it made a wort not so light and good, being high coloured, clammy, and did not run into fermentation so soon as that made by simple infusion, by six or eight hours.

“ WHEN the sick become numerous, the water, to mash the ground malt, may be boiled after dinner in the ship’s copper; and a small wooden vat may be placed in the galley for the purpose of brewing; the infusion may be strained through a piece of hair-cloth, and received into a clean wooden vessel, where it will keep sweet for about 30 hours.

“ THE wort is to be boiled up into a panado, with the sea-biscuit, or some of the dried fruits that are usually carried to sea; then let the scorbutic patients make at least two meals a-day on this palatable mess, and let them drink a quart, or more, if it shall be found to agree, (always beginning, however, with a smaller dose, and gradually increasing it) of the fresh infusion, in the course of the twenty-four hours. The grains from
whence

whence the wort hath been strained off, are to be applied as a poultice to the stiffened hams, with the addition of a little sweet oil.

“ WHEN the wort purges too much, abstain, or lessen the dose; or add as much of the Elixir of Vitriol as will make the drink gratefully sour: if it gripes so much as to create distress, give from fifteen to twenty drops of Liquid Laudanum in two spoonfuls of Cinnamon Water at bed-time. It is observable, that the wort opens the belly more or less, according as the patient is more or less advanced in the disease; since half a pint will have a greater effect in that way, if given in the last stage of the distemper, than four times that quantity taken in the first: A few loose stools were observed always to be of service, and when they ex-

ceeded, they were easily checked by a proper use of opiates and astringents*.”

IT is not only a pleasant thing for seamen to have sweet water on board, but is also of the greatest consequence to the preservation of their health. It may not, then, be altogether foreign to our present purpose just to observe, that pump or spring water possesses the remarkable property of preserving itself fresh, for a long space of time; as hath been lately demonstrated by the judicious Dr. HEBERDEN, who kept some of this water by him, in order to observe its different changes, near twenty years. For after remarking that distilled water, if kept in perfectly clean glass or stone bottles, with glass stopples, or metal

* Macbride's Exper. Essays: and Histor. Account of a new method of treating the scurvy at sea.

covers, is incapable of being spoiled, and will keep just the same for ever; he makes the following observations.

“MOST pump-water (says he) is as incapable of changing, and of being spoiled by keeping, as distilled water: for though it be loaded with various foreign particles; yet it seldom has any, or at most but a small proportion of a vegetable or animal nature, and therefore it will always remain the same. This property of water is not so much attended to, as it ought to be, by sailors, who usually supply their ships with river-water taken up near great cities, and then keep it in wooden casks: the necessary consequence is, that it soon putrefies, and most probably contributes very much to the occasioning of those putrid distempers, with which sailors are so apt to be afflicted.

Pump,

Pump, or spring water, would be greatly preferable; and if they could keep this in glafs or ftone bottles, or earthen jars, they would find it, after being carried round the world, juft the fame as when they fet out*.”

IT fometimes happens, that a fhip's crew is greatly afflicted with the fcurvy, when at fea, and yet quite unprovided with any proper helps. Under fuch circumftances, perhaps, a decoction of the common deal-fhavings, which are always to be had on board, bids as fair as any thing to relieve, or put a ftop to the growing evil. A large quantity of the decoction fhould be made at a time, in the fhip's copper, then put into a cask, and ufed for the common drink of the whole crew.

* Medical Tranfactions, vol. i. p. 19, 20.

The antiscorbutick power of the fir is well known, and hath been sufficiently experienced on various occasions. “ When the Swedes carried on a war against the Muscovites, almost all the soldiers of their army were destroyed by the true marsh or marine scurvy, having rotten gums, rigid tendons, &c. But a stop was put to the progress of this disease, by the advice of ERBENIUS the King’s physician, with a simple decoction of fir-tops; by which the most deplorable cases were perfectly recovered, and the rest of the soldiers prevented from falling into it. It also proved an excellent gargle for the putrid gums. From thence this medicine came into great reputation, and the common fir, *picea major*, or *abies rubra*, was afterwards called *pinus antiscorbutica*. *Pinus sylvestris*, the mountain-pine, has likewise been found
highly

highly antiscorbutic, of which a late accident has furnished a convincing proof. In the year 1736, two squadrons of ships fitted out by the court of Russia, were obliged to winter in Siberia. One commanded by **DEMETRIUS LAPTIEW**, not far from the mouth of the river Lena, was attacked by the scurvy. The men in their distress by chance found near them this tree growing in the mountains, and experienced it to have a most surprising antiscorbutic virtue. At the same time while **ALEXIUS TSCHIRIKOW** was passing the winter in the river Judoma, where it runs into the river Maja, a considerable number of his men were dreadfully afflicted with that disease. After various fruitless attempts to discover a remedy able to put a stop to this cruel disease, he at length accidentally hit also upon the pines, which grew plentifully on the
moun-

mountains, by which all his men were recovered in a few days. In some the medicine proved gently laxative, in others it affected the body so mildly, that its operation was scarce sensible*.”

IF then a simple decoction of the tops, cones, leaves, or even green bark and wood of those trees, be possessed of such excellent antiscorbutick powers; may not the dry wood be supposed to retain, in some degree, the same virtues? I presume it will be almost needless to observe, that the fresher the deal, and the stronger its smell of the turpentine, and the better it will be for the use here prescribed.

BUT the virtue of this drink would be greatly increased by the addition of some

* Lind on the scurvy, p. 176, 177.

coarse brown sugar, and especially molasses; for then it would be quickly converted into a liquor resembling spruce beer, which is allowed to be a certain preservative against the scurvy. The only difference of the two liquors, will be the using of deal-shavings instead of spruce fir; for the other ingredients and method of brewing, are to be precisely the same, in both. The directions, then, for making the spruce beer, will serve as a guide for making that with deal-shavings.

“TAKE twelve gallons of water, and put therein three pounds and an half of black spruce. Boil it for three hours; then take out the fir, and put to the liquor seven pounds of molasses, and just boil it up. Then take it off, strain it through a sieve, and, when milk warm, put to it about four spoonfuls of yeast to work it.

“ FOR

“ FOR common drink for seamen two gallons of molosses may be sufficient to an hoghead of liquor. It soon works. In two or three days stop the bung in the cask, and in five or six days, when fine, bottle it for drinking.

“ WHERE the spruce is green and plentiful, they boil it but about three quarters of an hour, so as that the bark will strip off from the branches by drawing through the hand. They never strain the spruce, but fill the cask, one half or two-thirds full of cold water, on about a pint or more of the grounds of the beer drank out of the cask. After taking the spruce out of the kettle, without straining it, put the molosses into the kettle: Make it just boil up, and fill it into the cask; and the grounds of the beer left in before will soon work it. If the hot
water

water will not fill the cask, fill it up with cold. There is no need of coolers to cool the liquor as in other beer. It drinks as well when one half or two thirds of the water is cold, as when you boil more of it. In the West-Indies they need boil but a trifle of the water; just enough to get the bitter out of the spruce. And two and an half gallons of moloffes will make a hoghead of tolerable good drink. Good West-India moloffes makes better drink than treacle or coarse fugar: Though in the want of the former either of the others may serve.

“ BEFORE the use of this beer was found at Newfoundland, the men were sickly, scorblick, &c. but now there is no country where they are more healthy. I have heard (says our author) a gentleman say, that now, when it has happened they had not
the

the spruce-beer, for want of moloffes, to drink, they would be sick. When I lived in New England (adds he) I had a vessel that went from thence to the West-Indies, and the Bay of Honduras, for logwood : I always charged the master of her to take black spruce with him, and give his men beer all the voyage, which he did, and his men were healthy and well in the West-Indies and in the Bay, when others at the same time and places, that drank water, were very sickly. I have so great an opinion of the beer, that I wish it was used in all our ships on the coast of Guinea, and in the West-Indies; and where at many places the water is very bad, which if brewed into this beer, by the fermentation would likely make it good drink, and with the help of the spruce nothing is so easy to make. It fines, and is fit to use very soon. The

H

spruce

spruce may be kept, in any dry place, good, for two or three years after cut. In the West-Indies the moloffes is plentiful, so that the beer would cost but a trifle *.”

THESE rules for brewing beer, with green or dried spruce, may be easily applied to that which is recommended to be made with deal-shavings, when at sea; and the proportion of the different ingredients may be varied, at pleasure, according as there shall be plenty or scarcity on board. And it is certainly better to drink sweet beer, though never so weak, than fetid water; for I have found by experiments, that the smell of stinking water will be entirely destroyed by the process of fermentation. This method, then, of restoring sweetness to impure water by means of fermentation, may, if put in

* Lond. Mag. Sept. 1764.

practice,

practice, prove of great utility to all seafaring people.

I HAVE hinted above, that the virtue of the deal-shavings would be in proportion, to the quantity of turpentine which they might contain. If so, it should follow from thence, that turpentine itself might be used with great advantage, for the purpose of brewing. And indeed it seems to me, to be greatly preferable to the wood. For it will readily impart its virtue to water, without the trouble of boiling; may be kept, in a small compass, for any length of time; and hath this further advantage, that a very little portion thereof, would be equal in power to a great quantity of the shavings. But for this use it must be chosen good, and free from all foreign mixtures.

THERE are four kinds of turpentine distinguished in the shops : The Chio, or Cyprus; the Venice; the Straßburgh; and the common turpentine. Of these, I should prefer the Chio and Straßburgh; as having a fine fragrant smell accompanied with a bitter taste, and yet being very little acrid. However, to have the beer, which is brewed with turpentine, to approach as near as possible to that made with spruce; I would recommend the turpentine drawn from the spruce-tree itself, to be made use of. And, if there were once a demand for it, no doubt but we should soon have enough of it in our markets; and it would also serve as a good article of return, for goods sent to the colonies from their mother country. Besides, it is said to afford a balsam superiour to most turpentines, though known only to a few physicians*.

* Lind on the Scurvy, p. 178.

A SMALL portion of turpentine will impart a strong taste and flavour to a large quantity of water. But I would advise that the water to brew with, should be only so far impregnated with the turpentine, as to render it agreeably bitter. This may be done by stirring the turpentine, in cold or warm water, with a stick, till it be strongly saturated therewith; and then adding so much of this terebinthine liquor, to the quantity of water designed for brewing, as would be found sufficient to give it a pleasant, bitter taste. But I prefer cold water, for making the most agreeable, mild, and balsamick infusion. And for this end, a quantity of turpentine might be put into a cask, about two-thirds full of water, and left there to infuse for a day or two; for then the motion of the ship, by agitating the water, would probably be sufficient,

without any further trouble, for assisting its menstruum to extract its virtues. However, if the turpentine should be perfectly fine and pure, and you would wish to dissolve the whole of it in the water; rub it in a stone, or marble mortar, with a thick solution of gum Arabic, and then gradually add thereto some water; and you will have a smooth, neat, milky solution, with which the quantity of water to be brewed, may be medicated at pleasure. But let it be remembered, once for all, that great care should be taken in the choice of the turpentine, and in making the infusion; for the virtue and taste of the liquor, will chiefly depend upon those two circumstances.

THE sugar or molasses needs only to be just boiled up with so much of the water, as, when thrown into the remainder, will
make

make it sufficiently warm for the act of fermentation; and then the yeast is to be added, and the whole process conducted, as above directed. The liquor may be worked in a scuttle-butt, or cask with one end taken out, placed somewhere within the heat of the fire (if in a cold climate) in the galley; and which should be kept flung, to prevent the effects of the motion of the ship. And the cask containing the beer, which is in use, should, in like manner, be hung up under the half-deck, or in any other convenient part of the ship; and be drawn off, daily, by means of a cock, till the whole be expended.

As yeast, in case of brewing, would be a very necessary article at sea, it might not be amiss to observe, that it may be very well preserved, as I am informed, by fashioning it into small cakes, in imitation

tion of those made with portable soup. This is done by dipping little pieces of tow into the yeast, when thick and settled, and drying them by a very gentle heat; and then putting them up into small boxes, to prevent them from being broken and destroyed. Tow is here to the yeast what hair is to lime, in making of mortar; a kind of cement to bind it together. When it comes to be used, it must be put into a little warm water, and kept there, in a gentle heat, for some time; till it begin to rise up, and work itself into a light active barm, fit for the purpose of fermentation.

By these means we may be enabled to carry to sea and keep in a small compass, all the materials proper for brewing: and if turpentine-beer should be constantly used on board, especially that which is recommended to be
brewed

brewed with the spruce-turpentine; we should, in all probability, have a liquor little, or no way, inferiour to that which is made with dried spruce. And our ships would, thus, be furnished with an opportunity of being supplied, at a very small expence, with an excellent antiscorbutick drink from day to day, even during a voyage round the world. I say, at a very small expence; because one gallon of molosses (wine measure) may, at an average, be reckoned at one shilling and nine-pence; and two gallons, or two gallons and an half, are said to be sufficient for making an hoghead of tolerably good beer*; and as to the turpentine, if it were chosen perfectly pure so as to be used by way of solution, with gum Arabic; the expence of it would be so very

* See page 95, 96.

trifling,

trifling, that it would not indeed be worth mentioning. But I leave the whole to the test of experience, by which alone it should stand, or fall.

Hatton-Garden,

May 1, 1768.

T H E E N D.





